# INDUSTRIAL MEDICINE AND SURGERY

*Management Issue*

Volume 23 MAY 1954 Number 5

# *Pro·derna* SILICONE

## skin protective cream

## the modern film barrier

## 52.5% silicone makes the difference

**ONLY** *Pro·derna* **contains about 2 to 20 times more free silicone than any other product available—chemically inert, flexible, greaseless, water and oil repellent.**

## prevents contact dermatitis

**from:** water • soap • household cleansers • wool
saliva • urine • rectal and vaginal discharge
cotton • oils • rust preventatives • fuels
inspection fluids • alkalis • acids • paints

**Does not sensitize or irritate**

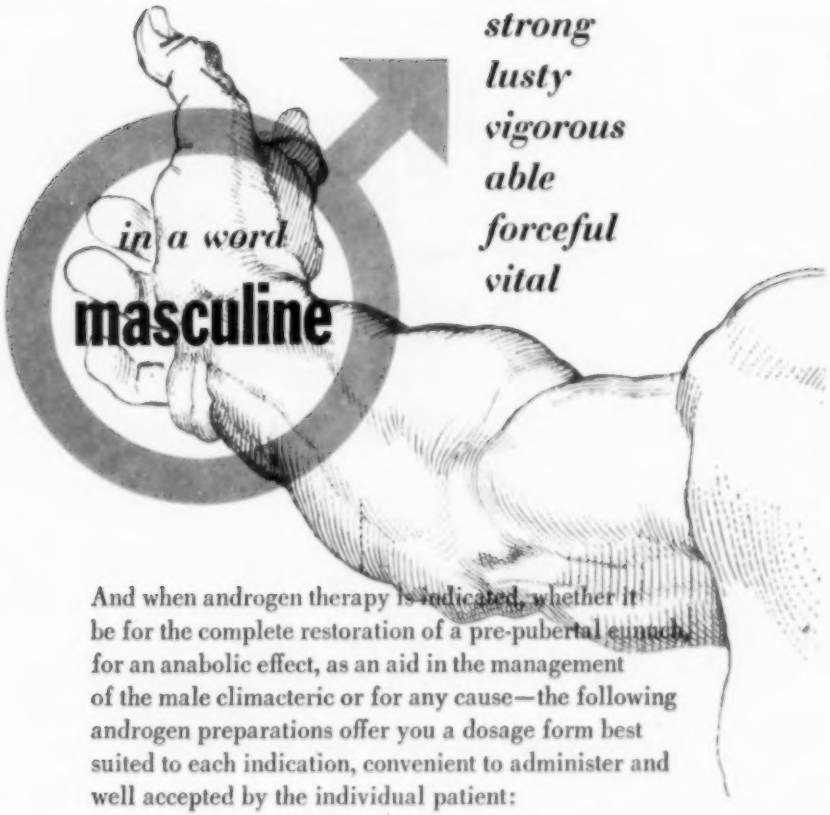
**Easily removed with LOWILA cake**

**Available at pharmacies in 1 oz. tubes and 1 lb. jars**

SAMPLES ON REQUEST

Westwood Pharmaceuticals • 468 Dewitt Street, Buffalo 13, N.Y.

DIVISION OF FOSTER-MILBURN CO.




*virile*
*strong*
*lusty*
*vigorous*
*able*
*forceful*
*vital*

And when androgen therapy is indicated, whether it be for the complete restoration of a pre-pubertal eunuch, for an anabolic effect, as an aid in the management of the male climacteric or for any cause—the following androgen preparations offer you a dosage form best suited to each indication, convenient to administer and well accepted by the individual patient:

**SYNANDROL*** brand of testosterone propionate in sesame oil: 25 mg., 50 mg. and 100 mg./cc. in 10 cc. multiple-dose vials and in single-dose Steraject® disposable cartridges.

**SYNANDROL*-F** brand of testosterone in aqueous suspension: 25 mg., 50 mg. and 100 mg./cc. in 10 cc. vials.

**SYNANDROTABS*** brand of methyltestosterone tablets, for oral use: 10 mg. and 25 mg., bottles of 25 and 100.

**SYNANDRETS*** brand of testosterone transmucosal tablets, for absorption by the transmucosal route: 10 mg., bottles of 25 and 100; 25 mg., bottles of 25.

PFIZER SYNTEX PRODUCTS

*TRADEMARK

Pfizer **PFIZER LABORATORIES** Brooklyn 6, N.Y.
Division, Chas. Pfizer & Co., Inc.

"THIOSULFIL"
eliminates the need for forcing fluids

"THIOSULFIL"
makes alkalinization unnecessary

"THIOSULFIL"
greatly minimizes risk of sensitization

"THIOSULFIL"
drastically reduces likelihood of toxic side effects

"THIOSULFIL"
quickly provides effective bacteriostatic concentrations
at the site of infection

"THIOSULFIL"®

Brand of sulfamethylthiadiazole

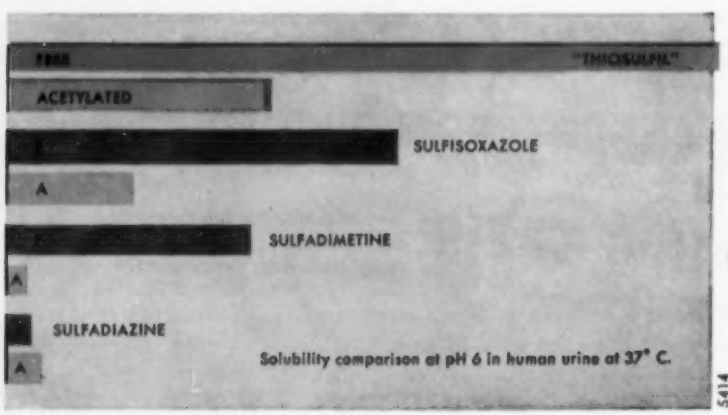
**The safest and most effective sulfonamide yet presented for**

## URINARY TRACT INFECTIONS

**TABLETS** — No. 785–0.25 Gm. per tablet (scored)
Bottles of 100 and 1,000

No. 914–0.25 Gm. per cc. — **SUSPENSION**
Bottles of 4 and 16 fluidounces

Note in chart below solubility of "Thiosulfil" when compared with the other three most frequently prescribed sulfonamides in urinary tract infections. Greater solubility means rapid action with minimum toxicity.




**New York, N. Y.**

Ayerst

**Montreal, Canada**

# INDUSTRIAL MEDICINE AND SURGERY

*The Journal of Medicine in Industry*

This Journal is dedicated to the advancement of sound industrial medicine, including the surgery of industrial trauma. To that end its varying contents will embrace scientific papers, reports, digests, news items and official statements, together with editorial comment. The editorial policy is to avoid undue censorship. Some contributions ably prepared will be published although contravening the personal opinions of the editors. Care will be exercised in checking the accuracy of known facts, as printed, but in all other respects statements and opinions are those of the author and may not be shared by the editors. On any article, the editors reserve the right to comment favorably or otherwise, in the current or any subsequent issue. On this basis, contributions are invited. The opinions expressed in any contributions, including the editorials of this Journal, do not necessarily reflect the attitude or opinions of any associated organization.

*Volume 23* MAY, 1954 *Number 5*

CONTENTS

PREDICTION OF SUSCEPTIBILITY TO ACOUSTIC TRAUMA BY DETERMINATION OF THRESHOLD OF DISTORTION — Merle Lawrence, Ph.D., and Cyrus L. Blanchard, M.D. — 193

MANAGEMENT'S STAKE IN HEALTH CONSTRUCTION — Edward J. Stieglitz, M.D. — 201

HEALTH INSURANCE AND INDUSTRY — A. M. Wilson — 205

A PSYCHOLOGIST'S VIEW OF RETIREMENT PROBLEMS — George K. Bennett — 209

THE MODERN CORPORATION AND THE NATION'S HEALTH—A SYMPOSIUM

- THE ROLE OF THE MEDICAL SCHOOL IN INDUSTRIAL AMERICA — George Packer Berry, M.D. — 213
- MEDICINE IN INDUSTRY — Robert Collier Page, M.D. — 217
- MODERN CORPORATION AND THE NATION'S HEALTH — Meyer Kestnbaum — 221

HUMAN RELATIONS AS APPLIED TO THE YOUNGER-AGE EMPLOYEE GROUP (18 to 35)—A SYMPOSIUM

- MANAGEMENT AND THE YOUNG EMPLOYEE — Louis E. Newman — 224
- HEALTH CONSERVATION IN INDUSTRY—THE INDUSTRIAL NURSE'S ROLE — Louise Candland, R.N. — 226
- HUMAN RELATIONS AND THE YOUNG EMPLOYEE — R. Lomax Wells, M.D. — 229

PRESIDENT'S PAGE — Robert Collier Page, M.D. — 233

ASSOCIATION NEWS — 234

OVERSEAS — Douglas Gordon — 234

BOOKS — 236

LETTERS — 240

EDITORIALS:

- New Jeopardy for Industrial Physicians — 241
- The Fragile Ear — 241
- Scrabble — 242
- Patron or Partner — 242

Associations: Officers and Directors — 4, 6, 8, 10

Personal News — 6

News, Comment, Opinion — 33

(Advertisers' Index — 46)

INDUSTRIAL MEDICINE AND SURGERY, The Journal of Medicine in Industry (with which are consolidated "The Industrial Doctor" and "International Journal of Medicine and Surgery"): Entered as second class mail matter August 28, 1941, at the Post Office at Chicago, Illinois, under the Act of March 3, 1879. Reentered, October 3, 1949. Additional entry at Sheboygan, Wisconsin. Published on the fifth of each month by INDUSTRIAL MEDICINE PUBLISHING COMPANY, Chicago. STEPHEN G. HALOS, President and Advertising Manager; STEPHEN F. HALOS, Vice-President and Assistant Advertising Manager; A. D. CLOUD, Publisher; CAREY P. MCCORD, M.D., Editor; DORIS FLOURNOY, Editorial Assistant; HAROLD A. HOOPER, Treasurer. Member, Audit Bureau of Circulations. PUBLICATION, EDITORIAL and EXECUTIVE OFFICES, 605 North Michigan Avenue, Chicago 11, Illinois. Subscription $6.00 per year in the United States; $8.00 (U.S. Currency) per year in Canada; $12.00 (U.S. Currency) per year in other countries. Single copies 75 cents. Title Registered in United States Patent Office. Rd. Canada, 1942. Copyright, 1954, by Industrial Medicine Publishing Company, Chicago. CHANGE OF ADDRESS: FOUR weeks' notice required; changes cannot be made without old address as well as new; please furnish zone number for new address if city requires it.

INDUSTRIAL AND RAILWAY MEDICAL AND SURGICAL ASSOCIATIONS

# INDUSTRIAL MEDICINE AND SURGERY

*is the official publication of these organizations but is independently owned and published*

## INDUSTRIAL MEDICAL ASSOCIATION

### OFFICERS

**President:**
GEORGE F. WILKINS, M.D.,
New England Tel. & Telegraph Co.,
Boston 9, Massachusetts.

**President-Elect:**
ROBERT COLLIER PAGE, M.D.,
Standard Oil Company (N.J.),
30 Rockefeller Plaza,
New York 20, New York.

**First Vice-President:**
KIEFFER, DAVIS, M.D.,
Phillips Petroleum Company,
Bartlesville, Oklahoma.

**Second Vice-President**
E. S. JONES, M.D.,
418 Calumet Building,
Hammond, Indiana.

**Secretary:**
ARTHUR K. PETERSON, M.D.,
R. R. Donnelley & Sons Company,
350 East 22nd Street,
Chicago 16, Illinois.

**Treasurer and Managing Director:**
EDWARD C. HOLMBLAD, M.D.,
28 East Jackson Blvd.,
Chicago 4, Illinois.

### DIRECTORS
**1952-54**

RUSSELL G. BIRRELL, M.D.,
Imperial Oil Limited,
56 Church Street,
Toronto 1, Ontario, Canada.

BENJAMIN M. FREES, M.D.,
629 South Westlake Avenue,
Los Angeles 5, California.

H. GLENN GARDINER, M.D.,
Inland Steel Company,
East Chicago, Indiana.

EARL F. LUTZ, M.D.,
General Motors Corporation,
General Motors Building,
Detroit 2, Michigan.

GRADIE R. ROWNTREE, M.D.,
Fawcett-Dearing Printing Co.,
Louisville 1, Kentucky.

L. HOLLAND WHITNEY, M.D.,
New Jersey Bell Telephone Co.,
Newark 1, New Jersey.

**1953-55**

EDWIN DEJONGH, M.D.,
Detroit Diesel Engine Division,
General Motors Corporation,
Detroit, Michigan.

JOHN E. KIRKPATRICK, M.D.,
516 Sutter Street,
San Francisco 2, California.

H. W. LAWRENCE, M.D.,
Procter and Gamble Company,
Cincinnati 17, Ohio.

JOHN L. NORRIS, M.D.,
Kodak Park Works, Eastman Kodak
Company, Rochester, New York.

CHARLES F. SHOOK, M.D.,
Owens-Illinois Glass Company,
Toledo 1, Ohio.

R. LOMAX WELLS, M.D.,
Chesapeake & Potomac Telephone Co.,
Washington 5, D.C.

### BOARD OF EXAMINERS FOR FELLOWSHIP

HENRY S. BROWN, M.D., 1951-54.
MCIVER WOODY, M.D., 1952-55.
ADOLPH G. KAMMER, M.D., 1953-56.

### DISTRICTS AND COUNSELORS

District
1 JAMES I. ROBERTS, M.D.
Maine, Vermont, New Hampshire, Massachusetts, Connecticut, Rhode Island.
2 S. CHARLES FRANCO, M.D.
Metropolitan New York and Northern New Jersey.
3 JOHN L. NORRIS, M.D.
Niagara Frontier District.
4 GLENN S. EVERTS, M.D.
Eastern Pennsylvania, Southern New Jersey, Delaware.
5 WALTER E. FLEISCHER, M.D.
Maryland, Virginia, District of Columbia.
6 EDWARD M. GUNN, M.D.
North Carolina, South Carolina.
7 ALLEN M. COLLINSWORTH, M.D.
Florida, Georgia.
8 JOSEPH T. NOE, M.D.
Western Pennsylvania, West Virginia.
9 REX H. WILSON, M.D.
Eastern Ohio.
10 H. W. LAWRENCE, M.D.
Western Ohio.
11 PAUL J. OCHSNER, M.D.
Michigan.
12 JULIAN E. WILLIAMS, M.D.
Tennessee.
13 GRADIE R. ROWNTREE, M.D.
Kentucky.
14 HARRY V. SIMS, M.D.
Alabama, Mississippi, Louisiana.
15 EMMETT B. LAMB, M.D.
Illinois, Indiana.
16 DANIEL E. DORCHESTER, M.D.
Wisconsin and Upper Michigan Peninsula.
17 LEONARD S. ARLING, M.D.
Minnesota, North Dakota, Iowa, South Dakota.
18 R. EMMET KELLY, M.D.
Missouri, Kansas, Nebraska.
19 TOM HALL MITCHELL, M.D.
Arkansas, Oklahoma.
20 GEORGE V. LAUNEY, M.D.
Northern Texas.
21 CARL U. DERNEHL, M.D.
Southern Texas.
22 RONALD P. RAWLINSON, M.D.
Montana, Idaho.
23 NATHANIEL A. THOMPSON, M.D.
Wyoming, Colorado, Utah, Nevada.
24 LEWIS M. OVERTON, M.D.
Arizona, New Mexico.
25 LLOYD M. FARNER, M.D.
Washington.
26 FORREST E. RIEKE, M.D.
Oregon.
27 JOHN E. KIRKPATRICK, M.D.
Northern California and Bay Area.
28 CLARENCE L. LLOYD, M.D.
Southern California.
29 FRANK HATLELID, M.D.
Territory of Hawaii.
30 W. HARVEY CRUICKSHANK, M.D.
Eastern Canada.
31 DOUGLAS R. WARREN, M.D.
Mid Canada.
32 WALTER SAUNDERS, M.D.
Western Canada.

### COMMITTEES

**By-Laws**
E. A. IRVIN, M.D., Chairman
J. DUANE MILLER, M.D.
A. K. PETERSON, M.D.

**Civil Defense**
M. H. MANSON, M.D., Chairman
A. J. FLEMING, M.D.
R. E. MASTERS, M.D.
E. J. SCHOWALTER, M.D.

**Education and Training**
A. G. KAMMER, M.D., Chairman
JEAN S. FELTON, M.D.
O. T. MALLERY, JR., M.D.
L. C. MCGEE, M.D.
J. WISTER MEIGS, M.D.
IRVING R. TABERSHAW, M.D.
H. A. VONACHEN, M.D.

**Foundation Activities**
KIEFFER DAVIS, M.D., Chairman
JOHN L. NORRIS, M.D.
JOHN J. POUTAS, M.D.
G. F. ROWNTREE, M.D.

**Health Achievement in Industry**
J. F. MCCAHAN, M.D., Chairman
O. T. MALLERY, JR., M.D.

**History Committee**
A. H. WHITTAKER, M.D., Chairman
O. P. GEIER, M.D.
ROBERT T. LEGGE, M.D.
J. I. ROBERTS, M.D.
MCIVER WOODY, M.D.

**Human Relations**
NORMAN PLUMMER, M.D., Chairman
L. E. HINKLE, JR., M.D.
WILLIAM P. ECKES, M.D.
L. J. WADE, M.D.

**Knudsen Award**
H. S. BROWN, M.D., Chairman
E. A. IRVIN, M.D.
M. H. KRONENBERG, M.D.

**Medical Care Committee**
W. A. SAWYER, M.D., Chairman
J. W. BROWN, JR., M.D.
LEO PRICE, M.D.
F. W. SLOSS, M.D.
D. S. THURBER, M.D.

**Membership Committee**
C. F. SHOOK, M.D., Chairman
C. U. DERNEHL, M.D.
D. E. DORCHESTER, M.D.

**Merit in Authorship Award Committee**
C. P. MCCORD, M.D., Chairman
R. E. ECKARDT, M.D.
J. S. FELTON, M.D.
E. L. WALSH, M.D.

**1955 IMA CONFERENCE, BUFFALO, APRIL 23-29, 1955**

NOW

*the* ***most active*** *type of hydrocortisone*

*for the* ***most effective*** *relief of skin disorders*

CORTIFAN CREAM 1%
(HYDROCORTISONE)

tube of 10 Gm.

***more beneficial****—in 42 per cent of dermatitis cases—*

*than hydrocortisone acetate ointment*†

†Sulzberger, M. B.; Witten, V. H., and Smith, C. C.: J.A.M.A. *152*:1456, 1953.

BEST TUBE SIZE
BEST Rx PRICE

Schering

CORTIFAN,* brand of hydrocortisone.
*T.M.

CORTIFAN CREAM

**I.M.A. COMMITTEES—Continued**

**Meritorious Service Award Committee**
H. W. LAWRENCE, M.D., Chairman
E. C. HOLMBLAD, M.D.
E. P. LUONGO, M.D.

**Past Presidents Committee**
E. A. IRVIN, M.D., Chairman
A. G. KAMMER, M.D.

**Committee on Practice**
P. J. BAMBERGER, M.D., Chairman
J. J. BRANDABUR, M.D.
FRANK E. GRAY, M.D.
R. T. JOHNSTONE, M.D.
R. EMMET KELLY, M.D.
CLARENCE L. LLOYD, M.D.
GEORGE O. NELSON, M.D.

**Public Relations Committee**
J. J. POUTAS, M.D., Chairman
C. E. DUTCHESS, M.D.
B. M. FREES, M.D.
R. EMMET KELLY, M.D.
J. F. SHEONTS, M.D.

**Publications and Editorial**
L. C. McGEE, M.D., Chairman
R. F. BUCHAN, M.D.
D. R. WARREN, M.D.

**Workmen's Compensation & Insurance**
C. T. OLSON, M.D., Chairman
L. S. ARLING, M.D.
T. I. BOILEAU, M.D.
N. J. ROBERTS, M.D.
W. M. WHEDEN, M.D.

**SCIENTIFIC COMMITTEES**

**General Scientific Committees**
FRANK PRINCI, M.D., Chairman

**Cardiovascular Diseases**
D. V. HOLMAN, M.D., Chairman
J. J. BIELAWSKI, M.D.
R. B. CRANE, M.D.

**Chest Diseases**
A. J. VORWALD, M.D., Chairman
L. E. HAMLIN, M.D.
LEO PRICE, M.D.
O. A. SANDER, M.D.

**Dermatology**
J. V. KLAUDER, M.D., Chairman
F. C. COMBES, M.D.
J. G. DOWNING, M.D.
G. E. MORRIS, M.D.
LOUIS SCHWARTZ, M.D.

**Geriatrics and Retirement**
C. E. DUTCHESS, M.D., Chairman
R. B. ROBSON, M.D.
W. A. SAWYER, M.D.
H. E. TEBBOCK, M.D.
R. LOMAX WELLS, M.D.
C. F. YEAGER, M.D.

**Problem Drinking**
R. G. BELL, M.D., Chairman
RONALD F. BUCHAN, M.D.
W. H. CRUICKSHANK, M.D.
PAUL A. DAVIS, M.D.
S. CHARLES FRANCO, M.D.
E. M. GUNN, M.D.
J. F. JELLEMA, M. D.
D. JOHN LAUER, M.D.
C. W. McGILL, M.D.
S. S. PINTO, M.D.
J. I. ROBERTS, M.D.
J. W. SHILLING, M.D.
B. L. VOSBURGH, M.D.
E. L. WALSH, M.D.

**Surgery of Trauma**
A. H. WHITTAKER, M.D., Chairman
J. M. DZIOB, M.D.
F. B. MacMILLAN, M.D.
R. A. SUTTER, M.D.
J. L. THOMPSON, M.D.
J. HUBER WAGNER, M.D.

**Toxicology**
R. M. WATROUS, M.D., Chairman
D. W. FASSETT, M.D.
E. V. HENSON, M.D.
L. MASON LYONS, M.D.
L. W. SPOLYAR, M.D.

# *Personal*

INDUSTRIAL Health Council, of Birmingham, Alabama, (described in "The Birmingham Plan," by JOHN K. WILLIAMS, in *Industrial Medicine and Surgery*, June, 1953), now has a full-time Medical Director in the person of ALBERT G. LEWIS, JR., M.D., recently appointed to that position. This appointment is part of a general expansion of the Council's case-finding and health education services covering the 40,000 employees of the now 243 participating concerns. DR. LEWIS is a native of Midway, Alabama; a graduate of Bullock County High School, and the University of Alabama. He attended Alabama Medical College and later Jefferson Medical College, at Philadelphia, where he received his M.D. in 1945. He interned at Grady Memorial Hospital, Atlanta; was a U.S. Air Corps Flight Surgeon in World War II; resident in internal medicine at Jefferson-Hillman Hospital for two years; and then took postgraduate medical study at the University of Pennsylvania for a year and served as Director of Student Health Services at the University of Alabama for three years before entering private practice at Birmingham. He is an instructor in internal medicine at the Medical College of Alabama. He will devote his full time to the work of the Council, which includes periodic health tests, evaluations, referral clinics, and the preparation of health bulletins and information booklets, together with health workshop training programs. The Council will not provide treatment. The appointment of MRS. KATE MacMURRARY, R.N., of Trusville, Alabama, as Clinic Supervisor for the Council has also been announced.

THE Michigan Industrial Medical Association convened its Fifth Annual "Michigan Industrial Health Day" at Kalamazoo on March 25, with the Upjohn Company serving as host. A full day's program, as presided over by DR. SHERMAN E. ANDREWS, President of the Michigan Industrial Medical Association, was presented by DRS. E. GIFFORD UPJOHN, DONALD MARSHALL, WILLIAM GREEN, HAROLD A. MACHIN, HOMER STRYKER, ROSS C. HILDRETH, EDWARD C. HOLMBLAD, GEORGE L. WALDBOTT, ARTHUR P. LONG, EDGAR

**New England Industrial Medical Association**

**Officers—1953-54**

FRANK BARDEN, M.D., President
Saco Lowell Shops, Biddeford, Maine

KARL T. BENEDICT, M.D., Vice President
Norton Company, Worcester, Mass.

J. ALLAN THOMPSON, M.D., Secretary-Treasurer
New England Telephone and Telegraph Company
245 State Street, Boston, Mass.

**Board of Directors—1953-54**

PRESTON N. BARTON, M.D.
New Departure Div., General Motors
Bristol, Connecticut

HENRY F. HOWE, M.D.
The Procter & Gamble Company
Quincy, Massachusetts

ROBERT FLANDERS, M.D.
967 Elm Street, Manchester, N.H.

LEONARD LANDRY, M.D.
Simplex Wire & Cable Company
Cambridge, Massachusetts

ROBERT C. THOMPSON, M.D.
General Electric Company, Lynn, Mass.

**Component Society of the Industrial Medical Association.**

**Rhode Island Society of Industrial Physicians and Surgeons**

**Officers**

RICHARD F. McCOART, M.D., President
Universal Winding Company, Cranston.

THOMAS A. EGAN, M.D., Vice-President
New Haven Railroad, Providence.

JAMES P. DERBY, M.D., Secretary
Division of Industrial Hygiene, State Department of Health, Providence.

ROBERT T. HENRY, M.D., Treasurer
Newman Crosby Company, Pawtucket.

**Board of Directors**

FRANK A. FERLIANO, M.D.
Providence Tuberculosis League, State of Rhode Island, Providence.

REMINGTON P. CAPWELL, M.D.
Whittet-Higgins Co., Providence.

EDWARD F. DOUHERTY,
Liberty Tool and Gauge Co., Providence.

JOSEPH C. JOHNSTON, M.D.
Texas Company, Providence.

CHARLES L. FARREL, M.D.
Collyer Insulated Wire Co., Pawtucket.

**New York State Society of Industrial Medicine, Inc.**

**Officers**

SAMUEL M. HYMAN, M.D., President
221 West 36th Street, New York City.

A. GLENNON FLAGG, M.D., Vice-President
440 West 34th Street, New York City.

MAURICE J. STONE, M.D., Secretary
1749 Grand Concourse, New York City.

JOHN J. BLACKFORD, Executive Secretary
70 Saratoga Avenue, Yonkers 5, New York.

**Executive Council**

**The Industrial Doctor**

**(Reg. U.S. Pat. Off.)**
**Now combined with**
**INDUSTRIAL MEDICINE and SURGERY**

# Sterile until the moment of use!

RED CROSS

## STERILE GAUZE PAD

Johnson & Johnson

Pure, sterile gauze sealed in individual envelopes. Packages of 12's, 25's and convenient dispensing packages of 100's.

Johnson & Johnson

**Ideal for your office!**

**Ideal for your bag!**

This product has no connection whatever with the American National Red Cross.

### Western Industrial Medical Association

**Officers**

DAN O. KILROY, M.D., President
3300 Third Avenue, Sacramento 17, California.

HOMER S. ELMQUIST, M.D., Vice-President
629 S. Westlake Avenue, Los Angeles 5.

EDWARD J. ZAIK, M.D., Secretary
The Pacific Telephone & Telegraph Co., 740 South Olive Street, Los Angeles 14.

CLARENCE L. LLOYD, M.D., Treasurer
Medical Director, North American Aviation, Inc., Los Angeles 45.

ELIZABETH SCHEUNER, Assistant Secretary
The Pacific Telephone & Telegraph Co., 740 South Olive Street, Los Angeles 14.

**Directors—1954**

PACKARD THURBER, JR., M.D.
111 West Seventh Street, Los Angeles 14, California.

CHARLES M. MCGILL, M.D.
Tacoma, Washington.

**Directors—1955**

VERNE G. GHORMLEY, M.D.
2014 Tulare Street, Fresno, California.

DOUGLAS D. MCKINNON, M.D.
Medical Square Bldg. No. 1, 2200 West Third Street, Los Angeles 5, California.

**Directors—1956**

FORREST E. RIEKE, M.D.
210-A N.E. Oregon Street, Portland 14, Oregon.

A. C. REMINGTON, M.D.
9851 Sepulveda Boulevard, Los Angeles 45, California.

Chairman of the Board of Directors:
CHRISTOPHER LEGGO, M.D.
California & Hawaiian Sugar Refining Corporation, Ltd., Crockett, California.

### Central States Society of Industrial Medicine and Surgery

**Officers**

President
DONALD C. CONZETT, M.D., Dubuque, Iowa.

President-Elect
J. M. L. JENSEN, M.D., Chicago.

Vice-President
ELI S. JONES, M.D., Hammond, Indiana.

Secretary-Treasurer
CHARLES DRUECK, M.D., 28 East Jackson Blvd., Chicago 4, Illinois.

Program Chairman
LEONARD ARLING, M.D., Minneapolis.

Program Co-Chairmen
EDWARD SCHOWALTER, M.D., Chicago.
JOHN F. SHRONTS, M.D., Minneapolis.

**Board of Governors**

1954—LEONARD ARLING, M.D., Minneapolis.
LLOYD E. HAMLIN, M.D., Chicago.
ELI S. JONES, M.D., Hammond.
MILTON H. KRONENBERG, M.D., Peoria.
EMMETT B. LAMB, M.D., Indianapolis.

1955—DANIEL E. DORCHESTER, M.D., Sturgeon Bay, Wisconsin.
H. GLENN GARDINER, M.D., East Chicago, Indiana.
FRANK G. OBER, M.D., Burlington, Iowa.
EDWARD SCHOWALTER, M.D., Chicago.
RICHARD A. SUTTER, M.D., St. Louis.

1956—ELSTON L. BELKNAP, M.D., Milwaukee.
CHARLES A. CIBELIUS, M.D., Rockford, Illinois.
BURTON C. KILBOURNE, M.D., Chicago.
ARTHUR K. PETERSON, M.D., Chicago.
THEODORE J. SMITH, M.D., Whiting, Indiana.

**Component Society of the Industrial Medical Association.**

KAHN, and DONALD D. IRISH. The evening session was addressed by CLAYTON C. PURDY, Esquire, speaking to the subject, "The Doctor and the Law." At the business session DR. LYNDLE R. MARTIN was made President; DR. PAUL J. OCHSNER, President-Elect; DR. M. W. SHELLMAN, Vice-President; and DR. WM. J. FULTON, Secretary-Treasurer.

AMERICAN ASSOCIATION OF RAILWAY SURGEONS has scheduled the dates of its annual meetings for the next four years as follows: 1955—April 12-13-14; 1956—April 10-11-12; 1957—April 9-10-11; 1958—April 8-9-10—all at Drake Hotel, Chicago.

J. DUANE MILLER, M.D., Grand Rapids, a member of The Council of the Michigan State Medical Society, has been elected Chairman of the Permanent Conference Committee for the year 1954. This Committee is composed of representatives from the Michigan State Medical Society, the Michigan Hospital Association, the Michigan League for Nursing, and the Michigan State Nurses Association. The Committee has been in existence five years and studies problems of mutual interest to the three healing professions indicated above.
—*J. Michigan State M.S.*, March, 1954.

AN AUSTRIAN Society for Occupational Medicine (Osterreichische Gesellschaft fur Arbeitsmedizin) was founded in Vienna on April 4, 1954. At the first meeting many physicians and engineers, delegates of the employers and the workers organizations and the social insurance organizations were present. The Chief of the Health Department of the State, DR. KHAUM, was elected Honorary President; the Professor of Hygiene of the Viennese University, PROF. R. BIELING, was elected President; and DR. CHRISTIAN FRIEBERGER, Secretary.

BRITISH Occupational Hygiene Society held its second conference Tuesday, April 6, 1954, at the London School of Hygiene and Tropical Medicine, Keppel Street, London W.C. 1. The Conference was devoted to the discussion of "Upper Allowable Concentration" (or Threshold Toxicity Limit). Three papers were presented.

### Florida Association of Industrial and Railway Surgeons

**Officers**

JOHN H. MITCHELL, M.D., President
241 W. Ashley St., Jacksonville

LLOYD J. NETTO, M.D., President-Elect
416 Coneau Bldg., West Palm Beach

P. J. MANSON, M.D., Vice-President
8037 N.E. 2nd Ave., Miami

JOHN H. MITCHELL, M.D., Secretary-Treasurer
24 W. Ashley St., Jacksonville

**Directors**

F. H. BOWEN, M.D.
2000 Park St., Jacksonville

V. A. LOCKWOOD, M.D.
East Coast Hospital, St. Augustine

F. D. GRAY, M.D.
12 N. Rosalind Ave., Orlando

J. C. DAVIS, M.D.
P.O. Box 465, Quincy

**Component Society of the Industrial Medical Association.**

### Association of Mine Physicians

**Officers**

GEO. W. EASLEY, M.D., President
Williamson, West Virginia.

E. M. HOWARD, M.D., Vice-President,
Harlan, Kentucky.

J. C. LAWSON, M.D., Secretary-Treasurer,
Williamson, West Virginia.

W. R. LUNDY, Executive Secretary,
Offices: Williamson, W. Va.
Pineville, Ky.

**Committee on Organization**

R. O. ROGERS, M.D., Chairman,
Bluefield, W. Va.
C. L. HARSHBARGER, M.D., Norton, Va.
CARL E. AUSMUS, M.D., Jellico, Tenn.
J. A. BENNETT, M.D., Algoma, W. Va.
J. C. MOORE, M.D., Keen Mountain, Va.
T. M. PERRY, M.D., Jenkins, Ky.
P. E. BLACKBERRY, M.D., Louisville, Ky.
CARL A. GROTE, M.D., Huntsville, Ala.
C. N. CARRAWAY, M.D., Birmingham, Ala.
**Component Society of the Industrial Medical Association.**

### Industrial Medical Ascoiation of Philadelphia

**Officers**

F. B. LANAHAN, M.D., President
Electric Storage Battery Company
Philadelphia

WILLIAM D. FRAZIER, M.D., President-Elect
The Baldwin-Lima-Hamilton Corp.
Eddystone, Pennsylvania

NORBERT J. ROBERTS, M.D., Secretary
Pennsylvania Railroad
1617 Pennsylvania Blvd.
Philadelphia

ALBERT J. SNYDER, M.D., Treasurer
Newton Square, Pennsylvania

**Directors**

HEINRICH BRIEGER, M.D.
Jefferson Medical College
Philadelphia

LAURENCE P. DEVLIN, M.D.
Philadelphia Quartermaster Depot
Philadelphia

GLENN S. EVERTS, M.D.
Curtis Publishing Company
Philadelphia

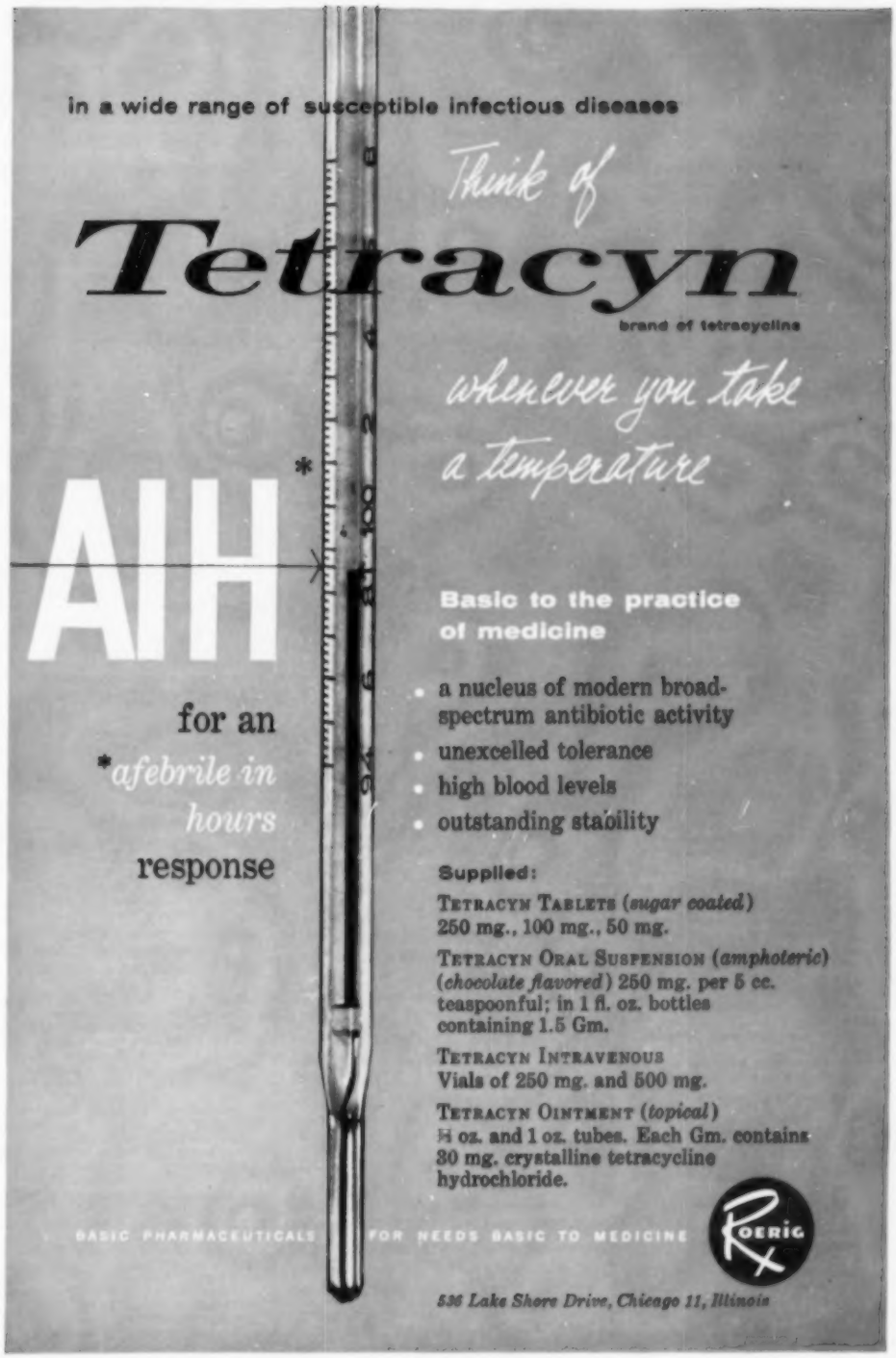
HOWARD J. JOHNSON, M.D.
Philadelphia Gas Works
Philadelphia

HAROLD LEFKOE, M.D.
John H. Mathis Company
Philadelphia

LEMUEL C. MCGEE, M.D.
Hercules Powder Company
Wilmington, Delaware

ALBERT J. SNYDER, M.D.
Newton Square, Pennsylvania

**Component Society of the Industrial Medical Association.**


in a wide range of susceptible infectious diseases
Think of
Tetracyn
brand of tetracycline
whenever you take a temperature
AIH
*
for an
*afebrile in hours
response
Basic to the practice of medicine
• a nucleus of modern broad-spectrum antibiotic activity
• unexcelled tolerance
• high blood levels
• outstanding stability
Supplied:
TETRACYN TABLETS (sugar coated)
250 mg., 100 mg., 50 mg.
TETRACYN ORAL SUSPENSION (amphoteric) (chocolate flavored) 250 mg. per 5 cc. teaspoonful; in 1 fl. oz. bottles containing 1.5 Gm.
TETRACYN INTRAVENOUS
Vials of 250 mg. and 500 mg.
TETRACYN OINTMENT (topical)
½ oz. and 1 oz. tubes. Each Gm. contains 30 mg. crystalline tetracycline hydrochloride.
BASIC PHARMACEUTICALS FOR NEEDS BASIC TO MEDICINE
Rx
ROERIG
536 Lake Shore Drive, Chicago 11, Illinois

## ★ AMERICAN ASSOCIATION OF RAILWAY SURGEONS ★

### Officers

*President:*
J. H. FRANCIS, M.D., Memphis, Tennessee.
*President-Elect:*
WILLIAM G. BESSMER, M.D., Davenport, Iowa.
*Vice-Presidents:*
MELVIN L. HOLE, M.D., Danville, Illinois.
J. RUDOLPH JAEGER, M.D., Philadelphia.
GEORGE H. WALKER, M.D., Lincoln, Nebraska.
*Recorder:*
JAMES K. STACK, M.D., Chicago.
*Treasurer:*
THEODORE L. HANSEN, M.D., 139 West Van Buren, Chicago 5, Wabash 2-3200, Ext. 220.

### Executive Board

ARTHUR H. METZ, M.D., Chairman, Chicago.
RAY S. WESTLINE, M.D., Chicago.
ROBERT M. GRAHAM, M.D., Chicago.
ALEXANDER M. W. HURSH, M.D., Philadelphia.
RAYMOND B. KEFNER, M.D., Chicago.
E. C. OLSON, M.D., Chicago.
*Secretary:*
CHESTER C. GUY, M.D., 5800 Stony Island Ave., Chicago 37, Midway 3-9200.

### *66th Annual Meeting, April 6-8, 1954, at the Drake Hotel, Chicago*

#### Territorial Association of Plantation Physicians

**Officers**

President
GARTON E. WALL, M.D.
Ewa Hospital, Ewa, Oahu
Vice-President
J. ALFRED BURDEN, M.D.
Paia, Maui
Secretary-Treasurer
A. M. CHANDLER, M.D.
Waipahu Hospital, Waipahu, Oahu
Executive Secretary
MRS. JEANNETTE WILKINSON, 1133 Punchbowl St., Honolulu, Oahu, T.H.
**Component Society of the Industrial Medical Association.**

#### Industrial Medical Association of New Jersey

**Officers**

THOMAS M. THOMPSON, M.D., President
Johnson and Johnson, New Brunswick.
J. H. WOLFSIE, M.D., Vice-President
American Cyanamid Company, Linden.
W. D. VAN RYZER, M.D., Secretary
Johnson and Johnson, New Brunswick.
GEORGE C. FREEMAN, M.D., Treasurer
Prudential Insurance Company, Newark.

**Board of Directors**

RALPH A. YOUNG, M.D.
General Motors Corporation, B. O. P. Assembly Division, Linden.
L. HOLLAND WHITNEY, M.D.
New Jersey Bell Telephone Company, 763 Broad Street, Newark.
GEORGE A. PAUL, M.D.
Hyatt Roller Division, General Motors Corporation, Harrison.
**Component Society of the Industrial Medical Association.**

#### Chicago Society of Industrial Medicine and Surgery

**Officers**

WILL F. LYON, M.D., President
DONALD B. KNOWLES, M.D., Vice-President
CORNELIUS M. ANNAN, M.D., Program Chairman
CHARLES DRUECK, M.D., Secretary-Treasurer

**Board of Directors**

Terms to Expire 1954:
KARL G. RUNDSTROM, M.D.
CARLO SCUDERI, M.D.
EUGENE L. WALSH, M.D.
Terms to Expire 1955:
BILLE HENNAN, M.D.
JOHN B. MERRIMAN, M.D.
WALTER J. PHILLIPS, M.D.
Terms to Expire 1956:
GEORGE W. BOHR, M.D.
FRANCIS J. HEJNA, M.D.
KENNETH E. SHERMAN, M.D.

HEDWIG KUHN, M.D., LYNN D. WILSON, Ph.D., E. S. JONES, M.D., and E. H. CARLETON, M.D., were among the speakers at an Industrial Health Seminar sponsored by Purdue University Calumet Center in cooperation with the Lake County Medical Society and the Industries of the Calumet Area, and held at Hammond, Indiana, April 20, 1954. DR. KUHN'S subject was "Eyes—Facts and Fallacies"; DR. WILSON'S, "Toxic Hazards"; and DR. JONES', "The Employee's Responsibility for Personal Health"; and DR. CARLETON'S, "The Importance of First Aid for Injuries and Diseases."

DR. JOHN P. MARBARGER, Research Director of the Aero Medical Association at the University of Illinois, Urbana, has been presented with the annual Tuttle Award of United Air Lines for outstanding research in 1953. DR. MARBARGER'S research has established that no adverse effects on the heart and circulation are produced by flight altitudes attained in pressurized airliners. There also are no blood pressure changes up to 18,000 feet without oxygen, even in cases in which the blood pressure was 180 before flight. Cabin "altitude" in pressurized aircraft seldom is above 8,000 feet. "It is our opinion that many cases now advised not to use commercial aviation could very safely travel by air," DR. MARBARGER said. The Tuttle Award was presented to DR. MARBARGER at the annual banquet (March 31) of the Aero Medical Association in Washington, D.C. The award was established by United in honor of the late COL. A. D. TUTTLE, who found-

#### Michigan Industrial Medical Association

**Officers**

SHERMAN ANDREWS, M.D., President
224 East Cedar St., Kalamazoo
LYNDLE R. MARTIN, M.D., President-Elect
The Detroit Edison Co., 2000 Second Ave., Detroit
PAUL J. OCHSNER, M.D., Vice-President
401 Verlinden Avenue, Lansing 4
W. N. SISK, M.D., Secretary-Treas.
The Upjohn Company, Kalamazoo

**Board of Directors**

THORNTON I. BOILEAU, M.D., Detroit
OTTO J. PRESTON, M.D., Flint
JOSEPH L. ZEMENS, M.D., Detroit
**Component Society of the Industrial Medical Association.**

#### Association of Railway and Industrial Physicians and Surgeons of Kansas City

**Officers**

ROBERT A. MOORE, M.D., President
106 W. 14th St., Kansas City, Mo.
CARL H. BRUST, M.D., Vice-President
1275 W. 71st St. Terrace, Kansas City.
TERRY E. LILLY, JR., M.D., Secretary-Treasurer
807 Argyle Bldg., Kansas City, Mo.

**Trustees**

F. L. FRIERABEND, M.D.
IRA LOCKWOOD, M.D.
**Component Society of the Industrial Medical Association.**

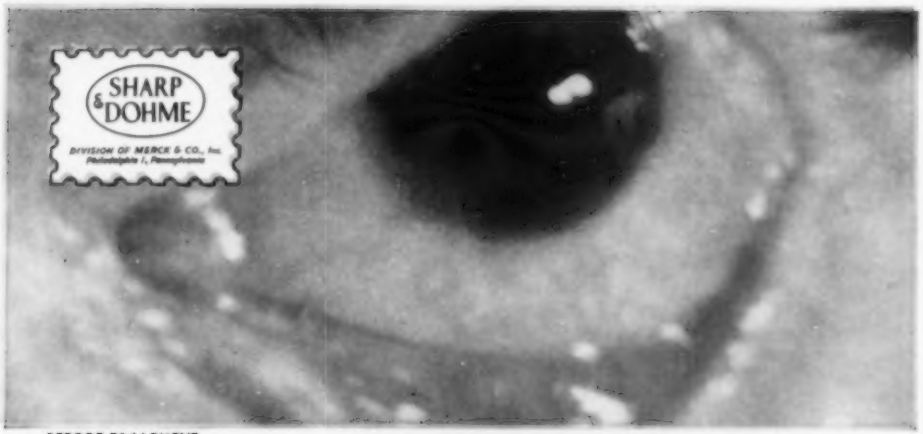
#### American Association of Industrial Dentists

**Officers**

ERNEST G. SMITH, D.D.S., President
Dental Director, Tennessee Valley Authority, Wilson Dam, Alabama
GRANT U. MACKENZIE, D.D.S., President-Elect, Dental Director, Ford Motor Company, Dearborn, Michigan
GUY C. KIRBY, D.D.S., Treasurer
Dental Director, Pratt-Whitney Aircraft, East Hartford, Connecticut
EDWARD R. ASTON, D.D.S., Secretary
Industrial Dental Consultant
Pennsylvania Department of Health
Harrisburg, Pennsylvania

**Directors**

FRANCIS J. WALTERS, D.D.S., Chairman
Senior Dental Surgeon, U.S. Public Health Service, Washington 25, D.C.
RICHARD V. WILLS, D.D.S., 1954
Dental Director, Farm Bureau Insurance Company, Columbus, Ohio
HOWARD E. DECAMP, D.D.S., 1955
Dental Director, Corning Glass Works, Corning, New York
DONALD W. HENRY, D.D.S., 1955
Dental Director, Molson's Brewery, Montreal 25, Canada
KENNETH W. MISHER, D.D.S., 1956
Dental Director, International Harvester Company, 185 North Wabash Avenue, Chicago, Illinois




BEFORE TREATMENT

AFTER TREATMENT

TOPICAL HYDROCORTONE REDUCES BOTH EXCESSIVE VASCULARIZATION AND SCARRING

## Sight-saving therapy in corneal injuries

# *Hydrocortone*®

ACETATE

(HYDROCORTISONE ACETATE, MERCK)

HYDROCORTONE is a principal adrenocortical steroid and the one with the most pronounced anti-inflammatory action at the tissue level. Ophthalmic preparations of HYDROCORTONE effectively block the inflammatory response whether due to physical trauma, chemical irritants, foreign protein or other specific allergens. Certain patients who do not show adequate response to cortisone may be treated satisfactorily with HYDROCORTONE.

**SUPPLIED:** Sterile Ophthalmic Suspension of HYDROCORTONE Acetate: 0.5% and 2.5%, 5 cc. vials. Ophthalmic Ointment of HYDROCORTONE Acetate: 1.5%, ⅛ oz. tubes.

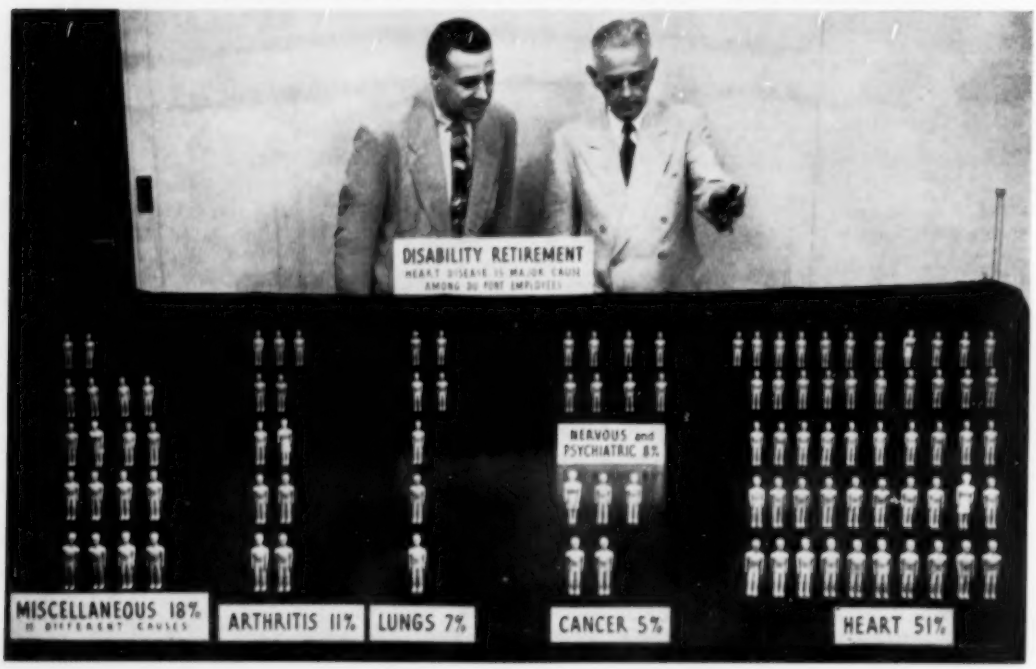
**HYDROCORTONE is the registered trade-mark of Merck & Co., Inc. for its brand of hydrocortisone.**

ed the company's Medical Department.

MEYER KESTNBAUM, President of Hart, Schaffner and Marx, Chicago, was one of the speakers on the Tuesday evening, April 27, program of the Industrial Medical Association (see page 221). On April 22 MR. KESTNBAUM was appointed by President Eisenhower to the Chairmanship of the Presidential Commission on Intergovernmental Relations, succeeding Clarence Manion, who resigned February 24. This Commission, set up by Congress last summer, "was assigned the job of studying overlapping activities, including double taxation, among Federal, state, and local governments, and recommending remedial measures." MR. KESTNBAUM, 57, was born in New York City, served in France in World War I as an army lieutenant and was awarded the Purple Heart; is a graduate of Harvard; is a Republican, and was a member of "Citizens for Eisenhower" in the 1952 Presidential race. He is Chairman of the Committee for Economic Development, a non-profit research group, Director of the Community Fund of Chicago, a former President of the Chicago Council on Foreign Relations, a board member of International House, and a Director of the Welfare Council of Metropolitan Chicago.

## New Haskell Laboratory

THE DU PONT Company, on March 29, dedicated a new center for expanded research on safeguarding the health of its employees and users of its products—a $2,000,000 structure, providing enlarged facilities for the Haskell Laboratory for Toxicology and Industrial Medicine. The new building, a one-story structure, three miles west of Newark, Delaware, contains 33,000 square feet of floor space and is completely air-conditioned. The original Haskell Laboratory was established in 1935 at the Experimental Station, for rigid testing of Du Pont products and manufacturing processes to eliminate as far as possible every potential health hazard to employees and customers. Its activities have been expanded to include broad studies in toxicology, biochemistry, pathology, physics, and physiology. Today the Laboratory's scientists are searching for basic knowledge of the causes and effects of fatigue, factors that make clothing comfortable, and methods for the early determination of abnormal heart conditions, as well as investigating the toxicity of chemicals made or used by the company. Before a new product is manufactured commercially, it is carefully screened by the Laboratory to uncover any possible hazards to employees in the manufacturing process, and to establish safe conditions and limits of use by the customer and ultimate consumer. The building is completely soundproofed, and three types of air conditioning are used. The Laboratory requires an annual budget of about $2,000,000. In Du Pont's recent booklet entitled "Protecting the Public Health" and describing the kind of work that goes on in the Laboratory, the accompanying picture is captioned as follows: "Heart Disease, a major area of Du Pont medical research, is discussed by Medical Director, DR. G. H. GERHMANN (right) and DR. C. A. D'ALONZO, who is making a special study of this subject. As is true with the rest of U.S. population, heart ailments are leading offenders against health of industrial employees." Of the Du Pont Medical Department the booklet says, "Basing its activities on the proposition that injury and illness must be stopped before they start, a company-wide staff of 166 doctors, 274 nurses, 102 scientists and technicians is at work on a program going far beyond the periodic medical examinations. Their goal: a safer, healthier U.S. industrial society."



**A balanced combination of decongestant, astringent and antiseptic, OpH promptly soothes minor ocular irritations.**

**OpH formula:**

**Neo-Synephrine® hydrochloride** (0.08%)
**zinc sulfate** (0.06%)
**boric acid** (2.2%).

***OpH is sterile, buffered and isotonic with tears.***

***Supplied in new, handy individual dropper bottles (10 cc.) which prevent dropper contamination.***

**Specify—OpH—new sanitary ophthalmic preparation in prescription type package.**

**WINTHROP-STEARNS INC.** New York 18, N. Y. • Windsor, Ont.

Neo-Synephrine (brand of phenylephrine), trademark reg. U. S. & Canada

# SUSTAINED PENICILLIN LEVELS IN STREPTOCOCCAL INFECTIONS

*Streptococcus haemolyticus.* Right: *Electron micrograph (from Mudd, S., and Lackman, D. B.: J. Bacteriol., Williams & Wilkins Co.).* Above: *Blood-agar plate, showing hemolysis.*

"... it has been shown that the treatment of streptococcic infections by adequate amounts of penicillin will prevent rheumatic fever ... On the basis of our experience, we feel that BICILLIN for injection more nearly supplies the need than any other product available at present."[1]

"Following the injection of 600,000 units of this drug in aqueous suspension, 100 per cent of ambulatory adult males show blood concentrations of 0.105 to approximately 0.03 unit per ml. for 10 days, and about 50 per cent of these subjects maintain demonstrable concentrations for 14 days ... The development of BICILLIN is one of the important milestones in antibiotic therapy."[2]

"The demonstration of detectable amounts of penicillin in the serum of most patients for four weeks following the administration of 1,250,000 units of BICILLIN suggests the feasibility of maintaining continuous drug prophylaxis against recurrences [*of* rheumatic fever] by administration of single monthly intramuscular injections."[3]

BICILLIN *is available in oral suspension, tablet, and injectable forms*

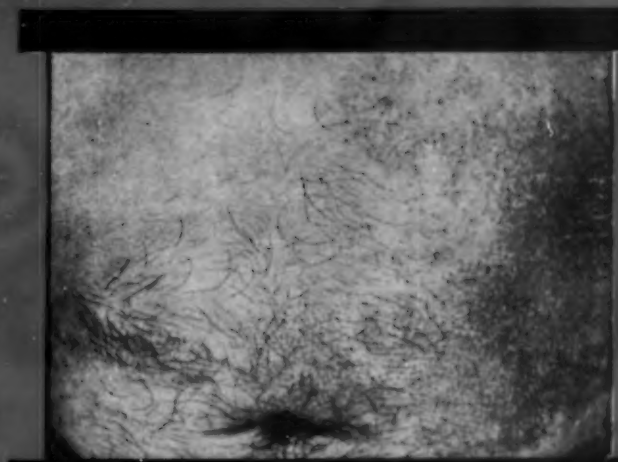
1. Breese, B. B.: J.A.M.A. *152*:10 (May 2) 1953
2. Welch, H.: Antibiot. & Chemo. *3*:347 (April) 1953
3. Stollerman, G. H., and Rusoff, J. H.: J.A.M.A. *150*:1571 (Dec. 20) 1952

**BICILLIN®**

*Benzathine Penicillin G*
*Dibenzylethylenediamine Dipenicillin G*

Wyeth®
Philadelphia 2, Pa.

*in*
*contact*
*dermatitis*



Contact dermatitis following spillage of noxious chemicals.

# Cortril

***brand of hydrocortisone***

## acetate topical ointment

After application of CORTRIL Acetate Topical Ointment, 1.0% twice daily, for seven days.

A PFIZER SYNTEX PRODUCT

Pfizer

**PFIZER LABORATORIES**
*Division, Chas. Pfizer & Co., Inc.*
*Brooklyn 6, New York*

INTRAVENOUS SOLUTION
CALCIUM DISODIUM

# VERSENATE*

## Safe...Effective...Therapy in Lead Poisoning without Organ Injury during Excretion

- Solution Calcium Disodium Versenate is the calcium chelate of ethylenediamine tetraacetic acid (EDTA). In the body calcium is displaced by lead, forming the lead chelate—nonionized—nontoxic—water-soluble—nonmetabolized—and excreted intact.
- Indicated for the reduction of blood and depot lead in acute or chronic lead poisoning and lead encephalopathy...
- For prevention of exacerbations in chronic lead poisoning.
- Worthy of trial in mercury and other heavy metal poisoning and for removal of radioactive and nuclear fission products.
- For intravenous use in proper dilution only.
- Available in boxes of six 5 cc. ampuls, each containing 1 gram. Instructions with each ampul. Literature on request.

Hardy, H.A., et al.: Calcium Ethylenediamine-tetraacetate in Treating Heavy Metal Poisoning, A.M.A. Arch. Indust. Hyg. 7:137 (1953).

*Versenate is the registered trademark of the Bersworth Chemical Company.

RIKER LABORATORIES, INC. 8480 BEVERLY BLVD. • LOS ANGELES 48, CALIF.

# NEW

more effective barrier cream

for the prevention of contact dermatitis due to primary irritants and sensitizing agents

## "KERODEX"®

PROTECTS against initial contact

HELPS PREVENT recurrence of a dermatitis after healing

**"KERODEX"** provides a protective coating . . . invisible, yet strong . . . as elastic as the skin itself. "Kerodex" is recommended for the prevention of housewives' eczema, "dishpan hands," chafing and diaper rash, inflammation due to body fluids and discharges. A vast range of occupational dermatoses may also be prevented with **"KERODEX"**.

2 TYPES AVAILABLE

"KERODEX" No. 71 (water-repellent) for wet work protects against soaps, shampoos, bleaching and washing compounds, fruit and vegetable juices, drugs in water solution, acids, alkalis, etc.

"KERODEX" No. 51 (water-miscible) for dry work protects against dust, grime, garden soil, solvents, paints, cleaning fluids, oils, grease, etc.

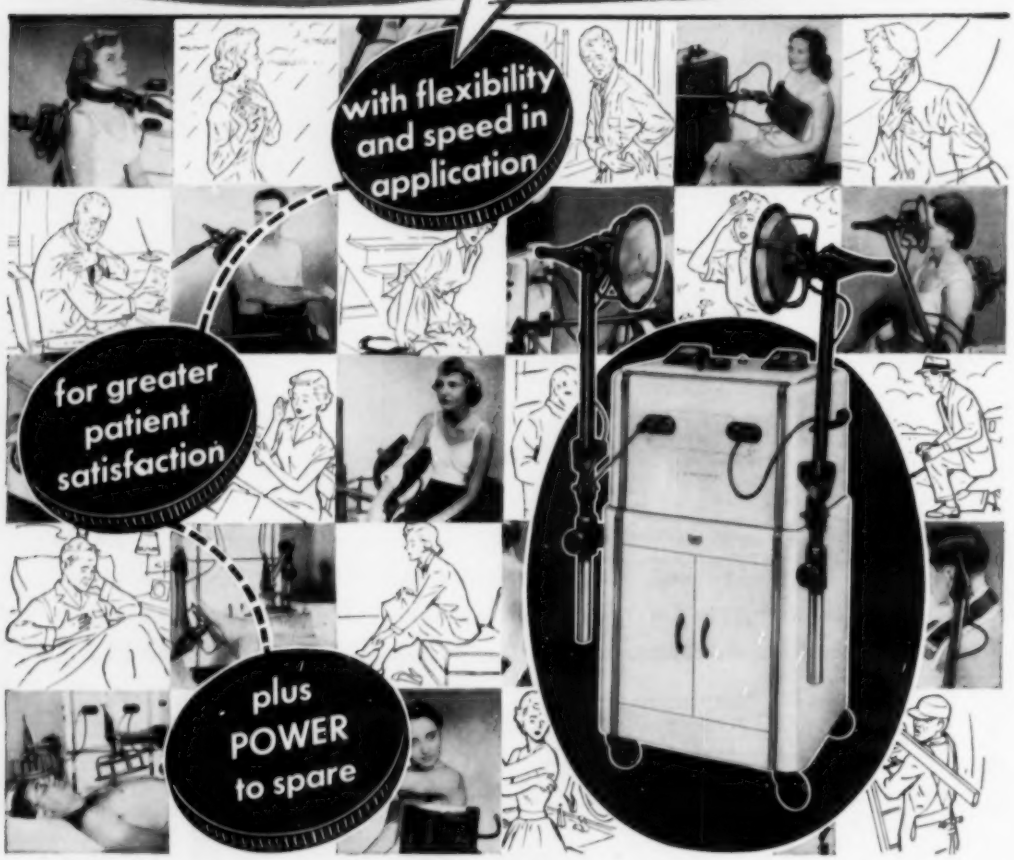
Each type is supplied in 4 oz. tubes and 1 lb. containers.

Literature available on request

- nonirritating and nonsensitizing
- may be used with equal safety on the face, hands, or any other area of the skin
- keeps pores and follicles free from foreign matter
- easy to use—economical—esthetically acceptable

Ayerst NEW YORK, N. Y. MONTREAL, CANADA

# It's a SURE MOVE Doctor!




**FOR A MORE EFFECTIVE OFFICE PRACTICE —**

Profit from the experience of thousands of other L-F users, choose the Model SW 660 short-wave Diathermy. It's simple to operate, easy to use and SAVES hours of your time. *With this diathermy*, there's no need for the busy doctor to refer or defer diathermy treatments. Prescribe for and treat *your* patients in *your* office.

L-F

**THE LIEBEL-FLARSHEIM COMPANY**

CINCINNATI 15, OHIO

# in RUBBER-ELASTIC bandage you need elasticity for compression plus body for support

Elasticity isn't the only requirement in a rubber-elastic bandage. Sufficient body for support is equally important. **ACE** Rubber-Elastic Bandages combine rubber and cotton in a balanced weave that provides the elasticity and body needed for uniform support throughout the affected area.

For elasticity and body, be sure it's

## ACE® RUBBER-ELASTIC BANDAGE

ACE Rubber-Elastic Bandages (5½ yds. fully stretched) are supplied in 2", 2½", 3", 4", and 6" widths. Handy Roller, 2½" wide (3 yds. fully stretched).

ACE, TRADEMARK REG. U.S. PAT. OFF.

ACE Bandages Are Made Only By

BECTON, DICKINSON AND COMPANY, RUTHERFORD, N. J.

B-D

**an essential ingredient in an Industrial Skin Cleanser**

*get it in*

# PAX·LANO·SAV HEAVY DUTY

## GRANULATED SKIN CLEANSER

Slow acting skin cleansers or those needing repeated washing to do a thorough job invite trouble. Quitting time jams pile up in washrooms, workers resent unnecessary delays and the temptation to skip and slight wash-ups is great. This can lead to the serious consequences of Industrial Dermatitis and its attendant compensation claims, lost time and medical costs. Always specify PAX-LANO-SAV HEAVY DUTY Granulated Skin Cleanser for the safety of thorough, fast skin cleansing.

**LOOK for the PAX ROOSTER for it's**
***YOUR ASSURANCE OF A SUPERIOR PRODUCT***

ACCEPTED COMMITTEE ON COSMETICS AMERICAN MEDICAL ASSOCIATION

PAX-LANO-SAV HEAVY DUTY Granulated Skin Cleanser has been awarded the Seal of Acceptance of the Committee on Cosmetics of the American Medical Association.

PAX

**G. H. PACKWOOD MFG. COMPANY**

*Manufacturing Chemists*

1532 TOWER GROVE AVENUE • ST. LOUIS 10, MO.

The known clinical advantages of rapid absorption, wide distribution in body tissues and fluids, prompt response and excellent toleration, PROVED by the extensive experience of physicians in successfully treating many common infections due to susceptible gram-positive and gram-negative bacteria, rickettsiae, spirochetes, certain large viruses and protozoa, have established

# Terramycin®

Brand of oxytetracycline

as a broad-spectrum antibiotic of choice

PROVED

PFIZER LABORATORIES, Brooklyn 6, N. Y.
Division, Chas. Pfizer & Co., Inc.

Pfizer

# 8 good reasons for using 'POLYSPORIN'®

## POLYMYXIN B—BACITRACIN OINTMENT

**1. ANTI-GRAM-NEGATIVE AND ANTI-GRAM-POSITIVE**

Combines the bactericidal activity of 'Aerosporin'® Sulfate Polymyxin B Sulfate against gram-negative bacilli with that of bacitracin against gram-positive organisms.[1,2] Their effects are completely additive.[3]

**2. ANTI-PSEUDOMONAS**

'Aerosporin' is the most effective therapeutic agent known against *Pseudomonas* (*pyocyaneus*).[6] *Pseudomonas* organisms commonly gain access to skin and lesions from the air and occasionally from instruments, dressings and drug solutions.[7]

**3. MINIMAL SENSITIZATION**

'Aerosporin' and bacitracin have low indices of allergenicity; an important advantage over penicillin, streptomycin, and sulfonamides.[5,6]

**4. NO DAMAGE TO TISSUES**

In concentrations used locally the antibiotics do not damage tissue or blood cells—compare this with the effects of chemical antiseptics.[6,7,8]

**5. NEGLIGIBLE ABSORPTION**

Systemic absorption of 'Aerosporin' or bacitracin from intact skin, mucous membranes, or lesions of either is practically nil.[6,8]

**6. RAPID DRUG RELEASE FROM BASE**

Non-aqueous base readily gives up the antibiotics to skin and tissue fluids. Absence of water from the base insures stability of the antibiotics.[4]

**7. SPARING GENERAL ANTIBIOTIC SENSITIZATION**

Use of rarely-sensitizing 'Aerosporin' and bacitracin for local lesions avoids possible sensitization to penicillin, streptomycin, or the broad-spectrum antibiotics, thus leaving the patient responsive to them in case of serious systemic infection.

**8. PROPHYLACTIC VALUE**

To protect burns, skin grafts, and other lesions from contamination by practically all bacterial pathogens, particularly *Pseudomonas*. Prevention of infection probably shortens healing time and reduces incidence of fever and inflammation.[7]

'POLYSPORIN'® Polymyxin B — Bacitracin Ointment

*Available in ½ oz. and 1 oz. tubes and ⅛ oz. ophthalmic tubes*


REFERENCES

1. Frank, P. F., Wilcox, C., and Finland, M.: In Vitro Sensitivity of Coliform Bacilli to Seven Antibiotics, J. Lab. & Clin. Med. *35:* 188 and 205, 1950.

2. Johnson, B. A., Anker, H., and Meleney, F. L.: A New Antibiotic Produced by a Member of the B. subtilis Group, Science *102:* 376, 1945.

3. Jawetz, E., and Marshall, M. S.: The Role of the Laboratory in Antibiotic Therapy, J. Pediat. *37*:545, 1950.

4. Wrong, N. M., et al.: The Treatment of Pyogenic Skin Infections with Bacitracin Ointment, Canad. M. A. J. *64:* 395, 1951.

5. Finnerty, E. F., Jr.: Bacitracin in Dermatology, New England J. Med. *245:* 14, 1951.

6. Jawetz, E.: Infections with Pseudomonas aeruginosa Treated with Polymyxin B, Arch. Int. Med. *89:* 90, 1952.

7. Jackson, D. M., Lowbury, E. J. L., and Topley, E.: Pseudopyocyanea in Burns, Lancet *261:* 137, 1951.

8. Meleney, V. L., and Johnson, B. A.: Bacitracin Therapy, J. A. M. A. *133:* 675, 1947.

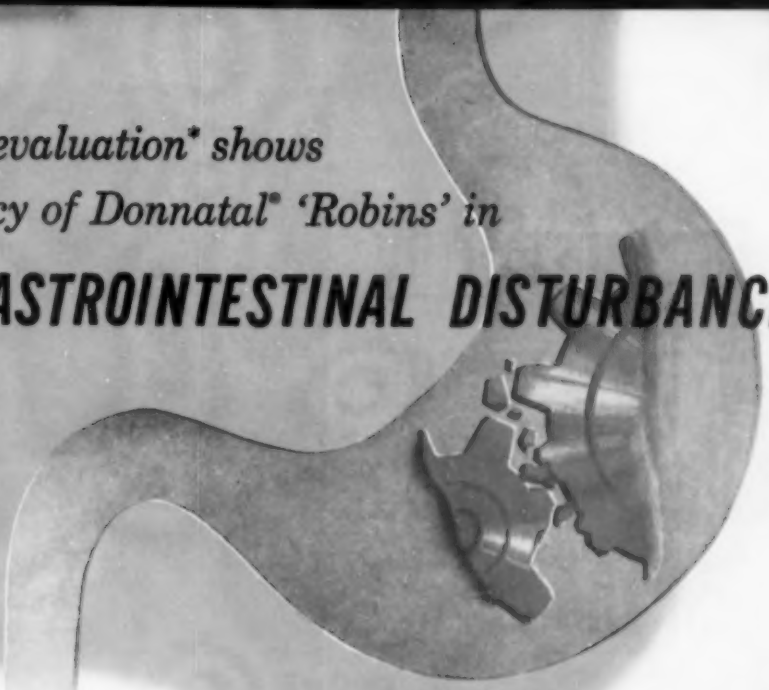


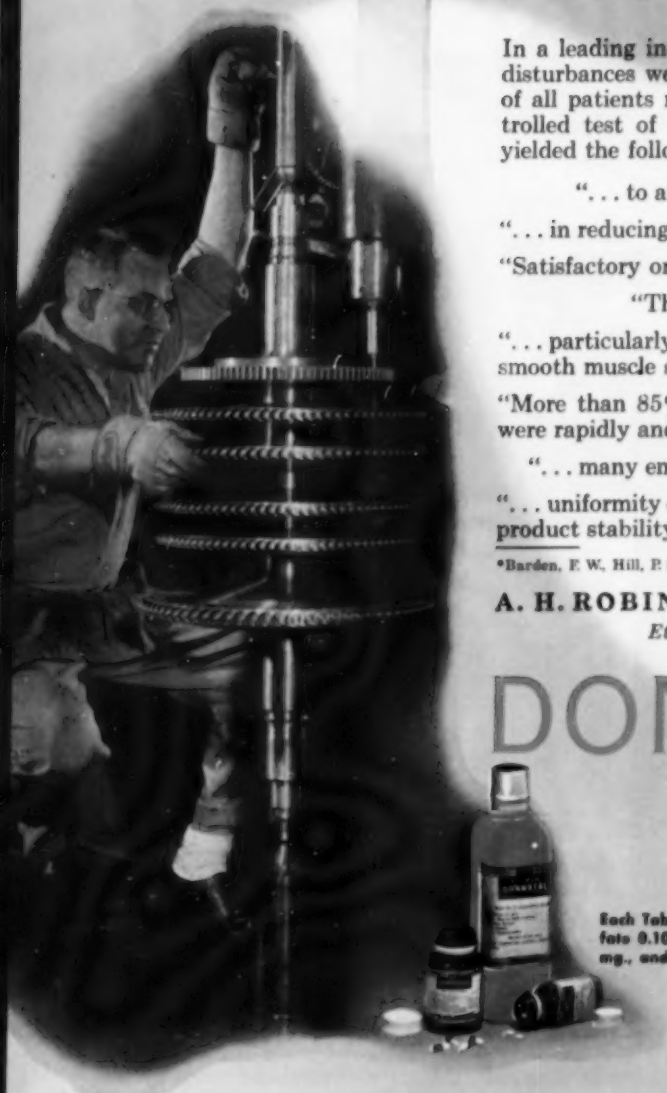
**Burroughs Wellcome & Co. (U. S. A.) Inc.**

Tuckahoe 7, New York

*Critical evaluation* shows efficacy of Donnatal® 'Robins' in*

# GASTROINTESTINAL DISTURBANCES





In a leading industrial plant, it is reported that "gastrointestinal disturbances were the chief complaints of more than fifty percent of all patients reporting to the dispensary for treatment." A controlled test of the efficacy of Donnatal® 'Robins' in these cases yielded the following conclusive observations:

"... to afford symptomatic relief as an emergency measure."

"... in reducing to a minimum unnecessary absenteeism."

"Satisfactory or complete relief of symptoms occurred rapidly ..."

"There was no evidence of undesirable side reactions."

"... particularly effective for the relief of pain associated with smooth muscle spasm of the gastrointestinal tract."

"More than 85% of patients with epigastric pain and discomfort were rapidly and completely relieved of symptoms."

"... many employees were able to resume work within an hour."

"... uniformity of composition ... convenience of dosage regulation, product stability, economy are factors of considerable importance."

*Barden, F. W., Hill, P. S., Mahaney, W. F., & Cuneo, K. J.: Journal Maine Med. Assn., Jan., 1954.

**A. H. ROBINS CO., INC.** • RICHMOND 20, VIRGINIA

*Ethical Pharmaceuticals of Merit since 1878*

# DONNATAL®

Robins

*Synergistic sedative-spasmolytic*

"... natural belladonna alkaloids with phenobarbital exhibit an unmistakable synergistic effect in the relief of smooth muscle spasm ..."

**Each Tablet, Capsule, or 5 cc. teaspoonful of Elixir contains: hyoscyamine sulfate 0.1037 mg., atropine sulfate 0.0194 mg., hyoscine hydrobromide 0.0065 mg., and phenobarbital 16.2 mg. (¼ gr.)**

**Tablets or Capsules — bottles of 100, 500 and 1000**
**Elixir.....bottles of 1 pint and 1 gallon**

# The first truly elastic bandage that doesn't "die" in the dryer!

***New TENSOR with Heat-Resistant live rubber threads can even be sterilized—and won't lose its stretch***

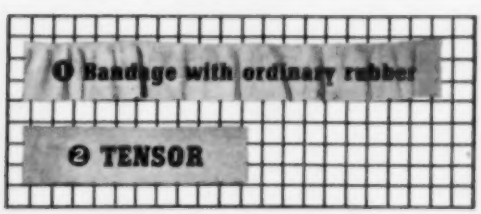
Here's the first truly elastic bandage that heat won't hurt—the first elastic bandage that *doesn't require special laundry care.*

New *Tensor* Elastic Bandages stand temperatures up to 280° F. with no appreciable loss of elasticity. The live rubber threads in *Tensor* are virtually unaffected by the high heat of commercial or hospital dryers. Even in the autoclave, *Tensor* keeps its stretch.

The result: *Tensor* Elastic Bandages last longer—and cost less to use. Even after many, many launderings, *Tensor* will still provide the uniform, steady, easy-to-control pressure that made it famous as the *first* truly elastic bandage.

Now available in hospital bulk put-up at no increase in cost. Why not specify new *Tensor* next time you stock your supply room.

## COMPARE THESE ELASTIC BANDAGES




❶ One-foot length of bandage made with ordinary rubber is stretched after high temperature drying—and stays stretched. Its elasticity "died" in the dryer.

❷ But one-foot length of heat-resistant Tensor snaps back to its original length, even after prolonged exposure to near scorching heat of commercial dryer.

## New TENSOR® ELASTIC BANDAGE

***Woven with Heat-Resistant live rubber threads***

BAUER & BLACK

Division of The Kendall Company
309 West Jackson Blvd., Chicago 6, Ill.

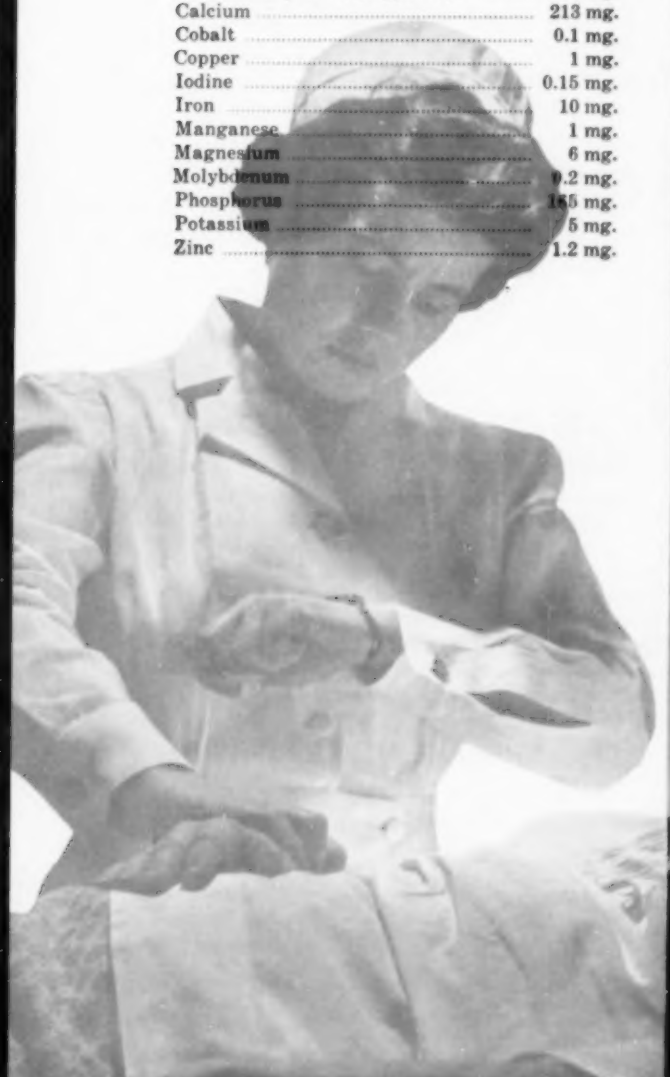
## to support the healthy...

# Viterra®

*a vitamin-mineral formulation of 21 balanced factors, supplementing the depleted diet*

**each capsule of *Viterra* contains:**

| | |
|---|---|
| Vitamin A | 5,000 U.S.P. Units |
| Vitamin D | 500 U.S.P. Units |
| Vitamin $B_{12}$ | 1 mcg. |
| Thiamine Hydrochloride | 3 mg. |
| Riboflavin | 3 mg. |
| Pyridoxine Hydrochloride | 0.5 mg. |
| Niacinamide | 25 mg. |
| Ascorbic Acid | 50 mg |
| Calcium Pantothenate | 5 mg. |
| Mixed Tocopherols *(Type IV)* | 5 mg. |
| Calcium | 213 mg. |
| Cobalt | 0.1 mg. |
| Copper | 1 mg. |
| Iodine | 0.15 mg. |
| Iron | 10 mg. |
| Manganese | 1 mg. |
| Magnesium | 6 mg. |
| Molybdenum | 0.2 mg. |
| Phosphorus | 155 mg. |
| Potassium | 5 mg. |
| Zinc | 1.2 mg. |



## to fortify the sick...

# Viterra® Therapeutic

*high-potency capsules specifically designed to meet increased nutritional needs during illness*

**each capsule of**

***Viterra Therapeutic***

**contains:**

| | |
|---|---|
| Vitamin A | 25,000 U.S.P. Units |
| Vitamin D | 1,000 U.S.P. Units |
| Thiamine Mononitrate | 10 mg. |
| Riboflavin | 5 mg. |
| Vitamin $B_{12}$ | 5 mcg. |
| Niacinamide | 100 mg. |
| Ascorbic Acid | 150 mg. |
| Calcium | 103 mg. |
| Cobalt | 0.1 mg. |
| Copper | 1 mg. |
| Iodine | 0.15 mg. |
| Iron | 10 mg. |
| Magnesium | 6 mg. |
| Manganese | 1 mg. |
| Molybdenum | 0.2 mg. |
| Phosphorus | 80 mg. |
| Potassium | 5 mg. |
| Zinc | 1.2 mg. |

Rx

*536 Lake Shore Drive, Chicago 11, Illinois*

## *RESULTS FAR SUPERIOR IN HAY FEVER*

In more than 92% of 102 patients in one study, ". . . results obtained with PHENERGAN in symptomatic relief of pollen hay fever were far superior to those obtained with any other antihistaminic agent."[1] Side effects were negligible; single, individualized doses were effective for periods of from four to 24 hours.[1]

The allergic patient, exhausted by the sneezing, rhinitis and lacrimation of hay fever, can be restored to *comfortable* living with PHENERGAN.

1. Silbert, N. E.: Ann. Allergy *10*:328-334 (May-June) 1952

Supplied:
Tablets—12.5 mg. per tablet; bottles of 100
Syrup—6.25 mg. per teaspoonful (5 cc.); bottles of 1 pint

# Phenergan®
**Hydrochloride**

PROMETHAZINE HYDROCHLORIDE

Wyeth
PHILADELPHIA 2, PA.

# Aeroplast®

## The surgical dressing applied by SPRAY

AEROPLAST LIQUID SURGICAL DRESSING offers new efficiency as a protective dressing for routine surgical purposes. Used as the sole dressing agent in an extensive series of laparotomies, thoracotomies, herniorrhaphies, ileostomies, compound fractures, etc., as well as burns, skin graft donor sites, and severe excoriation, Aeroplast has clearly demonstrated important advantages over conventional dressing materials and methods.* Aeroplast dressings are:

**transparent** They permit continuous visual inspection of healing progress without removal.

**occlusive** They seal contaminants out, vital fluids and electrolytes in (though sufficient vapor transmission occurs to prevent accumulation of normal perspiration). They withstand washing.

**flexible** Regardless of where applied, they "fit" and maintain their integrity. They do not restrict desirable motion or circulation.

**sterile** They are impermeable to bacteria. Properly applied to aseptic lesions, sterility is maintained as long as the dressing is allowed to remain intact. Aeroplast itself is bacteriostatic.

Aeroplast is applied with the press of a button, sprayed directly onto the lesion from a self-contained aerosol "bomb". It is *non-toxic, non-sensitizing, non-allergenic.* Dressings are easily removed, after a period sufficient to allow complete "setting", by simple peeling.

**Supplied in 6 oz. aerosol-type dispensers through your prescription pharmacy or surgical dealer.**

**Send for reprints and literature**

**AEROPLAST CORPORATION**
421 Dellrose Avenue, Dayton 3, Ohio

*Choy, D.S.J.: Clinical trials of a new plastic dressing for burns and surgical wounds. A.M.A. Arch. Surg. 68:33-43 (Jan.) 1954.

Sedamyl® gently relieves anxiety and tension generated by social pressure and personal tragedy. Why? Sedamyl is an "unusually safe and practical"[1] non-barbiturate sedative. Patients on Sedamyl stay alert, stay out of the barbiturate fog, avoid the groping travel between hypnosis and hangover. In fact, 9 out of 10 may get smooth yet decisive relief from anxiety and tension[1]... and never experience lethargy or letdown during or after Sedamyl sedation.

**sedate with SEDAMYL®**

[ ACETYLBROMDIETHYLACETYLCARBAMID, SCHENLEY ]

**relax anxiety, transform tension into a smile**

Each Sedamyl tablet provides 0.26 Gm. (4 gr.) acetylbromdiethylacetylcarbamid, Schenley.

*1. Tebrock, H. E.: M. Times 79:760, 1951.*

**Schenley Laboratories, Inc.,** *New York 1, New York*

PFIZER LABORATORIES *Division, Chas. Pfizer & Co., Inc.*

O

C U

L A R

I N F E C

T I O N S

R E S P O N D

T O B R O A D

S P E C T R U M

T E R R A M Y C I N®

BRAND OF OXYTETRACYCLINE

**the secret of sleep in a capsule . . .**

PULVULES

# 'Seconal Sodium'

(Secobarbital Sodium, Lilly)

**rapid action . . .**

**short duration . . .**

**awaken refreshed**

SUPPLIED IN PULVULES

| | |
|---|---|
| **No. 318** | **1/2 gr. (0.0325 Gm.)** |
| **No. 243** | **3/4 gr. (0.05 Gm.)** |
| **No. 240** | **1 1/2 grs. (0.1 Gm.)** |

**DOSAGE:**

Insomnia, 1 1/2 grs. Preoperative hypnotic, 3 to 4 1/2 grs. O. B., 3 to 4 1/2 grs. initially, followed by 1 1/2 to 3 grs. at one to three-hour intervals. Not more than 12 grs. in twenty-four hours.

ELI LILLY AND COMPANY, INDIANAPOLIS 6, INDIANA, U. S. A.

INDUSTRIAL MEDICINE AND SURGERY

MAY, 1954

# Prediction of Susceptibility to Acoustic Trauma by Determination of Threshold of Distortion

MERLE LAWRENCE, PH.D., and CYRUS L. BLANCHARD, M.D.
Institute of Industrial Health and the Department of Otolaryngology
University of Michigan Medical School, Ann Arbor

AMONG the many awesome achievements that man has accomplished is an ability to produce sounds so intense that no human ear could possibly remain undamaged if immersed in such a field. Acoustic scientists are making noteworthy strides in their attempts to reduce the intensity of these noises but in many instances the best that can be done is to attenuate the level to a point where not all ears are damaged to the same degree. That there exists great variation in individual tolerance to loud sounds has been known for many decades, but research has revealed neither the reason for some ears being stronger than others nor a satisfactory means of separating the strong from the weak ears. It is this latter problem which concerns us here, and we believe that the experiments here reported indicate that susceptibility to acoustic trauma can be predicted by testing with low level sounds to detect the point at which the ear begins to introduce non-linear distortion. The conceptions on which this experiment is based are outgrowths of recent conclusive evidence concerning the locus of the distortion processes of hearing.

*Basic considerations.* As in any mechanical system a departure from linearity in the relation between a displacing force and the response of the system indicates an imminent breakdown in the responding system if the displacing force is continued to increase, and, in general, for a given system the earlier the departure from linearity the lower the displacing force necessary to break down the system. It is upon this fact that the proposed test to detect noise susceptible ears is based, and before any experiments to investigate the feasibility of such a test can be meaningful the following factors concerning the nature of acoustic trauma must be determined: (a) the region of the auditory system in which is located the lesion resulting from over stimulation, (b) the mechanical factors that cause this destruction, (c) the nature of the ear's response to increasing stimulation as the level necessary to cause damage is approached, (d) the locus of the non-linear distortion process in the ear brought on by the increasing stimulation, (e) a means of detecting the first signs of non-linearity in the response of the human ear.

*The locus of damage.* There is overwhelming evidence that it is the organ of Corti that is altered or damaged when the ear is deafened by excessive sound. In 1907, Wittmaack[1] reported histological changes in the organ of Corti in the ears of animals subjected to high level noise. Similar lesions have been demonstrated and reported many times since and the locus has been consistently described as being, at first, with slight trauma, the sensory cells, then, with more severe damage, the entire organ of Corti. The locus of damage is the same whether produced by a concussion type of sound,[2] by noise,[3] or by steady pure tones,[4,5,6] and most recent investigations in this area have been attempts to reveal the effects of specific amplitudes and frequencies. There is also little doubt that injuries to the human ear are the same as those produced in experimental animals. Guild[7] has discussed this problem and produced photomicrographs showing lesions in the human organ of Corti resembling closely those produced in animals by overstimulation with sound.[8] From this evidence and more that has not been reviewed here, there is ample proof that the lesions produced in acoustic trauma are predominantly in the organ of Corti and more specifically are revealed as a destruction of the sensory cells. The individual differences in susceptibility to overstimulation found in animals and humans must be directly related to the ease with which the individual sensory structures can be destroyed.

*The responsible mechanical factors.* It is important now to know what vibratory property of sound is responsible for this destruction in the ear. If we consider the mechanical behavior of the air particles at the drum membrane the four

basic characteristics of the particle's movement can be easily visualized. They will, of course, have a certain oscillatory rate, i.e., they move back and forth at a certain *frequency*, and independent of this frequency they will also make their excursions through a certain distance: *particle displacement* or amplitude. In making these back and forth movements the particles do so with a certain speed and this depends upon the distance over which they have to travel, the amplitude, and the number of times per second, the frequency, they have to make this trip. This is called *particle velocity*. In going back and forth like this the particle must start and stop continously so it is always accelerating and decelerating from its velocity of the moment. Thus the *particle acceleration* varies with the velocity times the frequency again. The question is, which one of these four characteristics is responsible for the auditory damage. Smith[5] has discussed this problem quite adequately in connection with stimulation deafness experiments on animals. His results showed clearly that if sound pressure (a directly proportional variation of particle velocity) at the drum membrane is kept constant the lower frequencies produce more extensive lesions to the organ of Corti than the high frequencies. Since particle velocity is a product of amplitude and frequency, these two factors must vary inversely if their product is to remain constant. The lower frequencies, therefore, will have a greater amplitude than the high frequencies. This is the same relationship found for that of frequency and extent of auditory lesion, which leads to the conclusion that the magnitude of damage in the organ of Corti is directly related to the amplitude of movement associated with any particular stimulating sound. Particle acceleration is ruled out since it varies directly with frequency squared and so could not produce the observed inverse relationship between extent of lesion and frequency of stimulation when particle velocity is kept constant.

*The response function.* In order to understand further this process of destruction, it is necessary to know how the ear behaves as the intensity of the tone is increased from threshold to a destructing level. The most appropriate technique for following these activities is that of recording in animals the electrical activity of the sensory cells under stimulation. The potentials thus arising can be picked up by electrodes and after suitable amplification can be read directly on a vacuum tube voltmeter. In magnitude these electrical effects range from approximately one-tenth of a microvolt, limited by the general physiological noise of the animal and the thermal tube noise in the amplifiers, to around one thousand microvolts. It is generally accepted that the hair cells of the organ of Corti are the source of these potentials and so a measure of their magnitude reflects accurately those aspects of the hearing process that precede and include the generation of these potentials. We need not be concerned with the evidence for this; it is well established and has been thoroughly reviewed by Wever.[9]

At low levels of stimulation there is a linear relationship between the intensity of the sound and the electrical output of the ear. However, as the level of sound is raised there is a departure from this linearity until finally a maximum of response is reached and further increases in stimulus cause a reduction in the electrical output. Fig. 3, which will be explained more thoroughly later, shows graphically this relationship.

For human hearing at high levels there is a great deal of significance that can be attached to this function. The characteristic that is of greatest concern here is that of non-linearity, but before any conclusions can be made from a study of this area, we must determine what is happening to the sound energy going into the system if what is being recorded cannot account for it all (is non-linear).

Helmholtz[10,11] on the basis of perceptual data in the human explained by his transformation theory that as a manifestation of the non-linear distortion process part of the energy entering the system is converted to overtones. Thus as a pure tone of 1000 cps drives the system and the system becomes non-linear, that is, introduces non-linear distortion, the response to 1000 cps will no longer be linear and harmonic frequencies, multiples of 1000 cps, will become prominent, increasing in magnitude as the system is driven farther into non-linearity.

Eventually the system is destroyed and the energy is dissipated as heat.

In recording these electrical potentials from animals a wave-analyzer is generally used. This acts as a selective voltmeter that passes a narrow bandwidth at the frequency of interest. All irrelevant potentials are thus filtered out, and it is with such an instrument that the curves of Fig. 3 were made. By tuning the wave analyzer to one of the harmonic frequencies when the ear is responding non-linearly to the fundamental, the harmonics are found to be present and to increase as the ear is driven harder by the fundamental.[12,13] Thus in support of the transformation theory non-linear distortion manifests itself in the production of overtones.

*The anatomical locus of non-linearity.* Over a number of years many experiments have been performed to determine where this transformation takes place. Helmholtz stated that this was the result of overloading the middle ear and because of theoretical considerations as to the operation of the inner ear many investigators also have held to this view. The bulk of evidence now clearly shows that this non-linear distortion takes place in the sensory cells of the organ of Corti, probably in the very process of transforming this acoustic energy into the electric alternations picked up in the region of the cochlea. Wever and Lawrence[14] have shown that the middle ear and remaining fluid pathways respond with fidelity to a level of sound that would cause considerable damage to the structures of the inner ear.

*Detecting non-linearity in the human ear.* That non-linearity is a precursor of destruction is evident and since, as has been shown, both of these

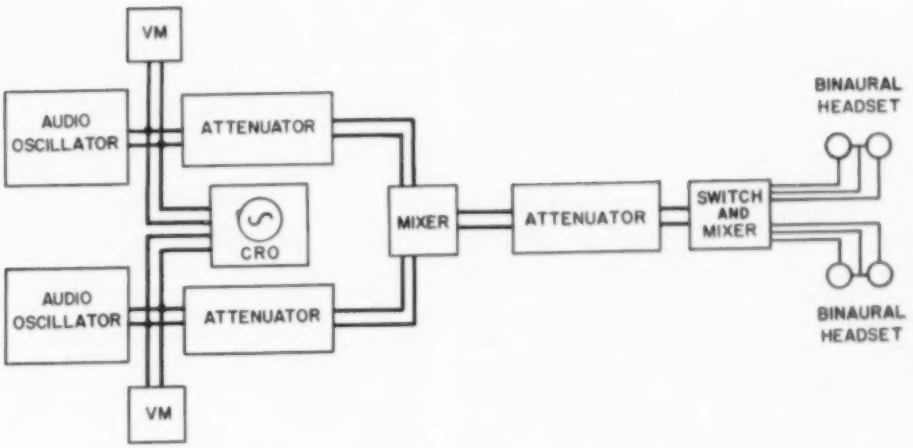



Fig. 1.
Arrangement of apparatus for measuring the threshold of distortion.

effects occur in the same structure, the sensory cells of the organ of Corti and are directly related to the amplitude of the impinging sound, a method for detecting the first signs of such an overload should serve as an indication of susceptibility. Basis for such an analysis can be found in the use of similar mechanical principles in the engineer's measurements to determine the strength of materials. Stress-deformation diagrams for various materials when plotted exhibit the same characteristics as described here for stimulus-response functions. Though no general fundamental relationship has been demonstrated between the limit of linearity (proportional limit in mechanics) and the level at which permanent damage occurs (elastic limit in mechanics), for any given kind of material an early proportional limit indicates a faulty piece of material with an early elastic limit.

Since, according to experimental evidence in support of the transformation theory, the production of harmonics is part of the non-linear process in vibratory systems, the detection of these new frequencies should indication non-linearity, and if there are differences among ears in susceptibility to permanent damage by loud sounds, there should be differences in the level at which these harmonics can be detected. If such differences can be determined, it would, of course, be difficult to validate without resorting to a long range program using humans in a noisy environment. However, since the locus of the non-linear process is the same as that of the source of electrical potentials validation can be carried out on animals by correlating the threshold of non-linearity with actual acoustic trauma. So this preliminary investigation has been carried out in two parts: the first, on human subjects, is a measure of the spread at four different frequencies of the individual differences in their threshold of non-linearity; the second, on animals, is a preliminary validation of the hypothesis that the lower the threshold of non-linearity the more susceptible the ear is to acoustic trauma. A more complete study and more thorough analysis of the data are to be reported elsewhere.

## Psychophysical Measurements of the Threshold of Non-Linearity

DETECTING the threshold of non-linearity in the human is not as easy as it is by means of electrical recording from the animal. But since, as shown earlier, the production of harmonics is part of the non-linear process, detecting the level of a tone at which the second harmonic can just be heard should give a threshold of non-linearity. An individual experienced in listening to pure tones can detect the harmonics produced in his own ear as the level of the pure stimulating tone is raised. But since this test is devised for inexperienced observers another method is used. This is called the beat-tone method whereby a second tone differing from the aural harmonic by a few cycles per second is introduced into the ear. When the pure tone is strong enough to overload the ear and a second tone of approximately the same intensity as but differing by a few cycles per second from the aural harmonic is also present, the listener will hear beats in the background of the fundamental tone. This is the technique employed in these experiments.

Fig. 1 is a diagram of the apparatus arrangement used. Two General Radio Type 1304A oscillators, each followed by an output voltmeter and attenuator, were fed to a matched mixing and attenuator circuit which in turn connected through a switching arrangement to two sets of Permoflux dynamic high-fidelity binaural earphones Type B-DHS-17B with ear cushions. By means of the switching circuit the final output could be switched to either or both sets of earphones, and another switch for each set allowed switching from right to left or to both ears. With this arrangement the experimenter could test either ear of the subject and listen at the same time, or he could switch in either or both of his phones without the subject's being on. A separate

switch provided for the presentation of either oscillator alone or of both together through the mixer. Special precautions must be taken in such a set-up to avoid inductive radiation and pick-up that might by-pass the attenuators. Shields and grounds were carefully arranged and no measurements were made until the elimination of these artifacts was assured.

The calibration of the earphones was carried out by means of a coupler built to the specifications of the National Bureau of Standards coupler Type 9A and fitted with a calibrated Western Electric Type 640AA condenser microphone feeding through a cathode follower preamplifier to a General Radio Type 736A Wave Analyzer. Harmonic analyses were carried out on the earphones for frequencies of 250, 500, 1000, and 2000 cps, the frequencies used in these tests. The second harmonic was 58 decibels below the level of 2000 cps, 56.2 decibels below 1000 cps, 52 decibels below 500 cps, and 48 decibels below 250 cps. This held throughout the useable dynamic range of the earphones which extended well beyond the levels used here.

The outputs of the oscillators were fed into the horizontal and vertical channels respectively of a cathode-ray oscilloscope which was used in setting the frequency of the beat-tone oscillator so as to be only 4 cycles per second from the second harmonic under test. This was done by adjusting the frequency of the beat-tone oscillator until the Lissajous figure, which is in a two-to-one pattern, is motionless, then by means of the cycles increment dial on the oscillator the frequency altered by 4 cycles per second.

The choice of the beat rate is difficult to make, but the difference between frequencies should be such that the frequency of beats is more easily detected than any other. Riesz[15] in working out his data on loudness discrimination used three cycles per second difference as giving best beats. Egan and Klumpp[16] employed a 2 cps difference. In a preliminary experiment under the experimental conditions described here, 4 cps seemed to give the best beats so this is the setting used throughout.

The tests were all carried out in a quiet, specially constructed, sound-eliminating room. Since the purpose of this experiment was to establish the normal range of the threshold of non-linearity, only normal ears were used. Each ear was first tested on a clinical audiometer and considered normal if the frequencies to be tested fell within plus or minus 10 decibels of the zero line on the audiogram. Thresholds were also taken with the General Radio oscillators and these figures used for the later calculations. All attenuator adjustments were made in 5 decibel steps.

The output was first switched to one of the experimenter's earphones and the fundamental tone adjusted to a level 70 decibels above the subject's threshold. The beat tone was adjusted to differ from the second harmonic of the fundamental by 4 cps and then adjusted to a level of 60 decibels above the subject's threshold for that tone. The experiments of Egan and Klumpp on aural harmonics with only two observers showed quite a difference in the setting of the beat tone and fundamental to get best beats with the second harmonic. A 10-decibel difference in this case seemed to give the best beats for the experimenter and so was used for the initial setting since the immediate object was only to have the subject hear the beats and be able to recognize the phenomenon. The tones were then switched to the subject's ear under test and invariably he heard the beats with only a slight adjustment of the beat tone level being necessary for him to hear best beats. If beats were not heard the level of both tones was raised until the beats were readily perceptible. By means of the common attenuator following the mixer both tones were then reduced together until the subject claimed the beats were no longer heard. A slight reduction in the beat tone generally made the beats return and the level of both was again reduced with the common attenuator. This procedure was followed until the beats had disappeared completely. The level of the fundamental at this point was recorded and considered to be the threshold of non-linearity.

That the separation between level above threshold of fundamental and of beat tone becomes greater as the intensity level of the fundamental is reduced has been reported by all experimenters making this sort of measurement. And in line with our earlier discussion this should be so because, as the level of the fundamental is raised after non-linear distortion has started, more and more of the available energy is going into the production of harmonics so the relative difference in level between fundamental and harmonic becomes less and less.

The effect of practice in making these judgments seems to be negligible. Repeated performances during a single test produced no consistent improvement in the initial threshold. Warren and Egan[17] using smaller decibel steps than used here, found that practice reduced the variability of judgments, but apparently produced little change in ability to judge best beats.

The histograms of Fig. 2 show the results of these tests. Seventeen ears were tested at 250 cps, whereas 34 were used for 500, 1000, and 2000 cps. The mean level above threshold at which a tone begins to show non-linearity becomes greater for the higher tones, being 65 decibels above threshold for 1000 and 2000 cps, but only 23 decibels above threshold for 250 cps. Also the spread of individual differences becomes greater. At 2000 cps, the standard deviation is 18 decibels and the range of judgments for this group of subjects extends from 30 to 95 decibels above threshold. This indicates that for the higher frequencies there is a sufficient difference among individuals to be selective if the premise upon which the test is based is valid.

If an ear is susceptible to damage by loud sounds and shows this tendency with a low threshold of non-linearity, it might be expected to demonstrate this at all frequencies. To get a measure of this inter-frequency relationship cor-

relation coefficients were calculated by the product-moment method for all combinations used. These were as follows:

$$r(500\text{-}2000 \text{ cps}) = .69$$
$$r(500\text{-}1000 \text{ cps}) = .76$$
$$r(1000\text{-}2000 \text{ cps}) = .83$$

The most positive correlation occurs between the two highest frequencies, whereas the correlation is not quite as good between the more widely spread frequencies. Two hundred and fifty cps was not used in these calculations because there were not complete measurements at this frequency.

Such calculations are one form of measure of reliability of the test, but the differences in correlation may be explained in terms of the action of the inner ear and so fail to test reliability. The most meaningful measure is a test-retest correlation. To determine this five subjects (nine ears), randomly selected, were recalled and tested again. In all cases their retest readings were within 5 decibels of their first test measures.

One important question remains and that concerns the validity of the test. Fortunately, it is of such a nature that it can be carried out on animals where actual acoustic trauma can be produced and the extent of this correlated with the threshold of non-linearity.

## Animal Experiments Testing Validity

ONE EAR from each of five guinea pigs was used in this series. They were first deeply anesthetized with ethyl carbamate (Urethane, U.S.P.). By a post-auricular approach the middle ear cavity was opened and the round window membrane

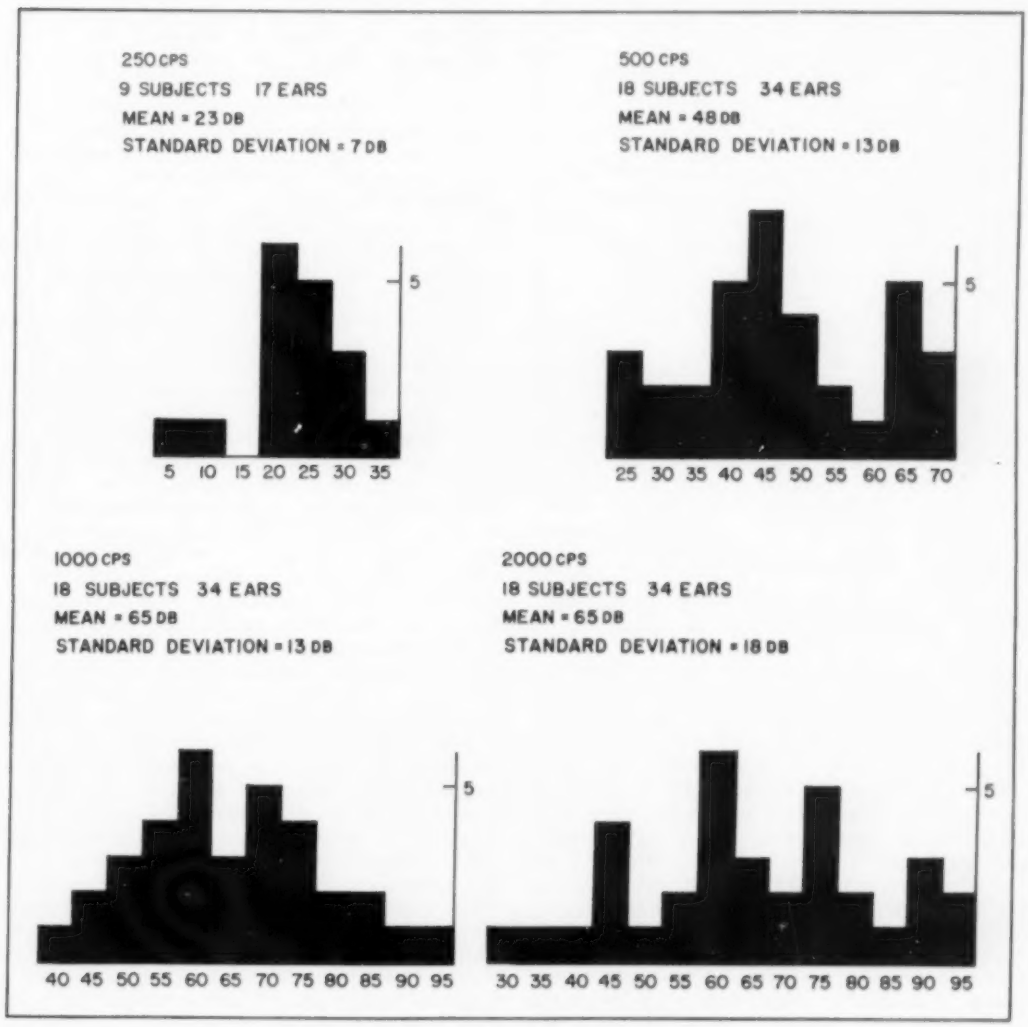

250 CPS
9 SUBJECTS 17 EARS
MEAN = 23 DB
STANDARD DEVIATION = 7 DB
5
5 10 15 20 25 30 35
500 CPS
18 SUBJECTS 34 EARS
MEAN = 48 DB
STANDARD DEVIATION = 13 DB
5
25 30 35 40 45 50 55 60 65 70
1000 CPS
18 SUBJECTS 34 EARS
MEAN = 65 DB
STANDARD DEVIATION = 13 DB
5
40 45 50 55 60 65 70 75 80 85 90 95
2000 CPS
18 SUBJECTS 34 EARS
MEAN = 65 DB
STANDARD DEVIATION = 18 DB
5
30 35 40 45 50 55 60 65 70 75 80 85 90 95

Fig. 2.
The number of ears (ordinate) plotted against the level above threshold (abscissa) at which their threshold of distortion was obtained. The mean and standard deviation for each group at each of the four frequencies are also shown.

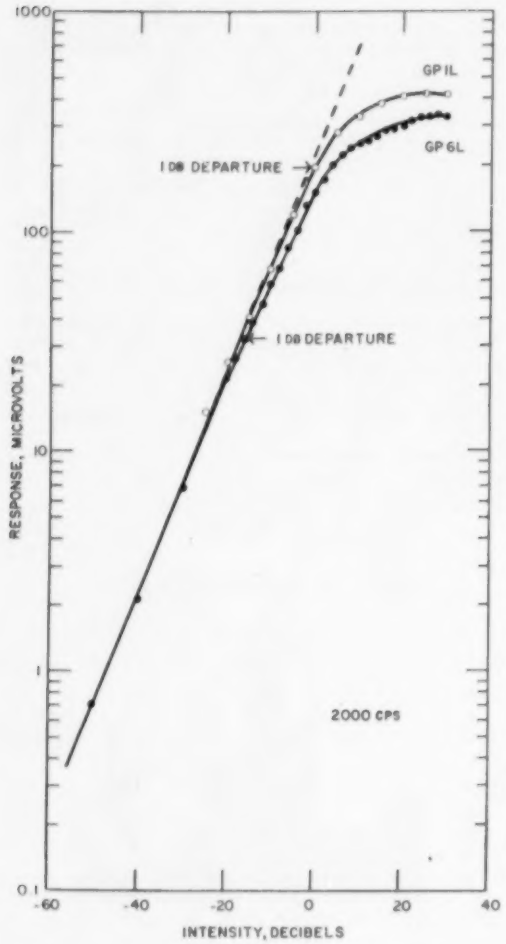



Fig. 3.

Intensity functions for two animals illustrating an early and a late overload. "1 db departure" indicates the level of response 1 decibel below what it would be if it remained linear (dashed line). The intensity scale is relative to 1 dyne per sq. cm.

exposed. A grounded indifferent electrode was placed in the tissue nearby, and a small platinum foil electrode was placed on the round window membrane. The potentials picked up were amplified and read by means of a General Radio Type 736-A wave analyzer. The animal was on a table in an electrically-shielded, sound-proof room with all electric equipment except the preamplifier outside the shield.

A Hewlett-Packard Type 206-A signal generator served as the sound source. This was controlled by matched attenuators and fed through a power amplifier to a University PA 30 loud speaker mounted on the outside wall of the sound-proof room. A bakelite tube conducted the sound from the speaker through the wall and shield to the animal's ear. This tube tapered and was inserted into the external meatus of the animal. The pinna was then taped to the tube so as to produce a closed system with the speaker diaphragm at one end and the drum membrane at the other.

Inserted into the side of the stimulating tube was a probe tube which ran concentrically with the bakelite to a point just away from the drum membrane. This probe was connected to a calibrated Western Electric Type 640AA condenser microphone and head amplifier. With this the sound source was calibrated and tests of the linearity of the stimulating sound made. Such tests showed that there was negligible distortion up to a level well beyond that which produced the maximum output from the animal. This varied somewhat with the adequacy of the seal at the animals meatus, so measurements were made for each animal.

The first step of the experiment was to run stimulus-response functions for each of 12 frequencies: 100, 200, 300, 500, 700, 1000, 1500, 2000, 3000, 5000, 7000 and 10000 cps. In two of the animals 1500 cps was omitted. At low levels the intensity of stimulating tone was raised by 5 decibel steps, but as the limit of linearity was approached, this was reduced to 2 decibels so as to permit determining the point of departure more accurately. On the plotted function a straight line was drawn through the linear portion of the curve and the remaining points connected as they dropped away from the line representing linearity. Fig. 3 shows such curves for 2000 cps for two animals. Since the point of departure from linearity is a very difficult thing to determine exactly, a point representing the response 1 decibel below what it should have been if linearity had been maintained is used. This has been called "1-db departure." It will be noticed in the figure that this occurs at a much lower level for guinea pig 6L than for 1L.

These 1-db departure points were than taken for each animal at each frequency and plotted in terms of decibels above the 1-microvolt response level. Since there is no true threshold to be found in recording cochlear potentials, the 1-microvolt level was arbitrarily selected to represent this point. What is actually plotted is the decibel difference between stimulus level necessary to produce 1-microvolt response and that necessary to produce the 1-db departure. Fig. 4 shows these plots for the five animals.

Before these curves can be interpreted it is necessary to have at hand the results of the next step in the experiment. After data for the normal functions for these various frequencies had been taken the ears were overstimulated. It was necessary, of course, to be sure that the amount of overstimulation was the same for each animal. Since there is the possibility that the maximum response may be related more to the number of hair cells with which an ear can respond than to the ease with which it can be damaged, the sound level selected was 20 decibels above that level which produced the maximum at the chosen stimulating frequency. This precaution is probably not necessary in view of the fact that the noise to which any two humans are subjected has no

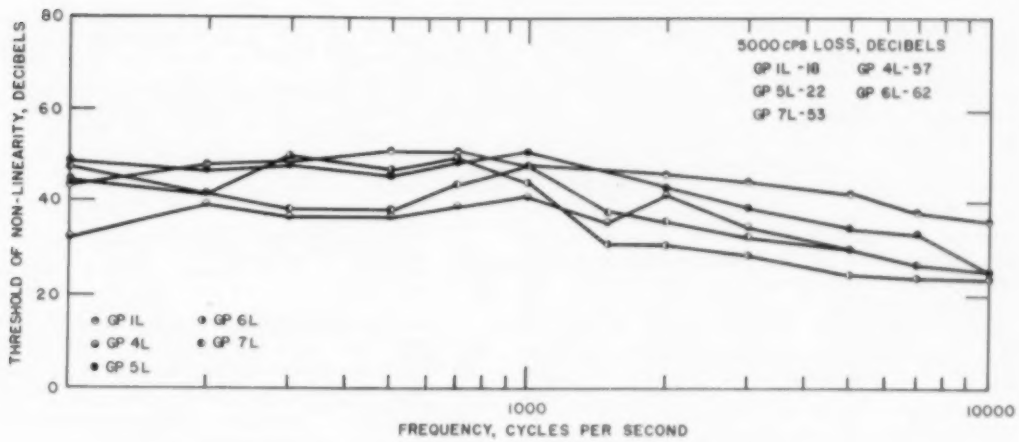



Fig. 4.

The "1 db departure" points above 1 microvolt response at various frequencies for five animals. For frequencies above 1000 cps there is a direct relationship between the point of overload as plotted and the loss in sensitivity due to acoustic trauma. The amount of this loss at 5000 cps is shown in the upper right hand corner.

relationship at all with their ear's ability at maximum output.

Each animal was stimulated at this level for 20 minutes. Animals 1L, 4L and 5L were stimulated with 5000 cps; animals 6L and 7L with 10,000 cps. The amount of loss due to overstimulation was determined in the linear portion of the curves by expressing in decibels the difference between the response in microvolts for a certain level of stimulation before overstimulation and the response for the same stimulus after overstimulation. At the overstimulation frequency of 5000 cps, guinea pig 1L lost 18.1 decibels; 4L lost 57 decibels; 5L lost 22 decibels. At the overstimulation frequency of 10,000 cps, guinea pig 6L lost 66 decibels and 62 decibels at 5000 cps. Guinea pig 7L lost 53 decibels at the overstimulation frequency of 10,000 cps and 32 decibels at 5000 cps.

Referring to Fig. 4, it can be seen that these losses seem to be unrelated to the non-linearity threshold for frequencies up to 1000 cps. At this frequency and above, however, there is a definite relationship. Those ears which showed the departure from linearity at the lowest level were hurt most. Guinea pig 6L has an average threshold of non-linearity for frequencies including and above 1000 cps of 30 decibels above 1 microvolt and was damaged more extensively than any other animal, while guinea pig 1L has an average threshold of non-linearity for the same frequencies of 42 decibels and was hurt the least.

It would appear from these preliminary results that the threshold of non-linearity for frequencies including and above 1000 cps serve in the guinea pig as an indicator of the ear's susceptibility to acoustic trauma. This may well be the case in human ears as well, for, as shown in the human experiments, there is not as great a range of individual differences for the human threshold of non-linearity at 500 cps as at 2000 cps.

## Conclusions

UNTIL the present time there has been no satisfactory test for the detection of ears most susceptible to acoustic damage. Those that do exist involve methods for fatiguing the ear and are based on an assumption that the ease of fatigue or slowness of recovery is related to the process by which destruction through sound is brought about. When fairly high levels of stimulation are used, this is certainly true, but the procedure is a hazardous one because fatigue of the sensory cells is undoubtedly an early stage of trauma and the more susceptible the ear, the more hazardous the test. This kind of fatigue can be demonstrated in the cochlear potentials as a loss in sensitivity. When the fatiguing tone is turned off, there will be some recovery of sensitivity, but this is not always complete, which indicates that some of the sensory cells contributing to the recorded potentials have been killed.

There is also a neural fatigue which can only be demonstrated clearly at low levels of stimulation, where it is not contaminated by the sensory cell fatigue.[18] It is obvious that this kind of fatigue predicts nothing about the ear's susceptibility to noise, since it is taking place central to the seat of destruction.

Another serious drawback of previous tests is that their validation is difficult to carry out. It would involve, of course, administering the test to large numbers of newly hired or transferred employees, whose future assignment would involve working in an environment of high level noise. The ears should then be tested at periodic intervals to check for hearing loss. But even if there proved to be good correlation between the scores of the susceptibility test and actual hearing loss, the conclusions would be subject to the same criticisms and doubts that are now leveled at data relating hearing loss and specific noisy conditions.[19] Because of this, there are always

doubts that such a validation experiment would be worth the time.

The test described in this report meets both of the above criticisms. It is carried out with fairly low levels of stimulation and the validation can be carried out quickly and certainly on animals.

As is well known, there are some ears that seem to be particularly fragile. If placed in noisy surroundings, which the great majority of individuals could stand indefinitely, these ears may soon show a loss. At the present time, it is difficult to detect such ears before it is too late. The measurement of the threshold of distortion quickly reveals these ears, and even though the number, percentagewise, may be small, it should be worth the effort to both the individual and his employer.

## References


1. Wittmaack, K.: Ueber Schädigungen des Gehörs durch Schalleinwirkungen. *Zeits. F. Ohrenheilk.*, 54:37-80, 1907.
2. Guild, S. R.: War Deafness and its Prevention. *J. Lab. & Clin. Med.*, 4:153-180, 1919.
3. Alexander, I. E., and Githler, F. J.: Histological Examination of Cochlear Structure Following Exposure to Jet Engine Noise. *J. Comp. & Physiol. Psychol.*, 44:513-524, 1951.
4. Wever, E. G., and Smith, K. R.: The Problem of Stimulation Deafness. I. Cochlear Impairment as a Function of Tonal Frequency. *J. Exper. Psychol.*, 34:239-245, 1944.
5. Smith, K. R.: The Problem of Stimulation Deafness. II. Histological Changes in the Cochlea as a Function of Tonal Frequency. *J. Exper. Psychol.*, 37:304-317, 1947.
6. Smith, K. R., and Wever, E. G.: The Problem of Stimulation Deafness: III, The Functional and Histological Effects of a High-Frequency Stimulus. *J. Exper. Psychol.*, 39:238-241, 1949.
7. Guild, S. R.: Effects of Sound: Pathological—Including Hearing Loss. The Acoustic Spectrum, Lectures presented at the Inservice Training Course, University of Michigan Press, Ann Arbor, Michigan, 1952.
8. Crowe, S. J., Guild, S. R., and Polvogt, L. M.: Observations on the Pathology of High-Tone Deafness. *Bull. Johns Hopkins Hosp.*, 54:315-379, 1934.
9. Wever, E. G.: Theory of Hearing. John Wiley & Sons, Inc., New York, 1949.
10. Helmholtz, H. L. F.: Ueber Combinationstöne. *Ann. Phys., 2nd Series*, 99:497-540, 1856.
11. Helmholtz, H. L. F.: Sensations of Tone. Trans. by A. J. Ellis, London: Longmans (2nd Eng. Ed.), pp. 152 ff, 411 ff., 1885.
12. Stevens, S. S., and Newman, E. B.: On the Nature of Aural Harmonics. *Proc. Nat. Acad. Sci., Washington*, 22:668-672, 1936.
13. Wever, E. G., and Bray, C. W.: Distortion in the Ear as Shown by the Electrical Responses of the Cochlea. *J. Acous. Soc. Am.*, 9:227-233, 1938.
14. Wever, E. G., and Lawrence, M.: Physiological Acoustics. Princeton University Press, Princeton, 1954.
15. Riesz, R. R.: Differential Intensity Sensitivity of the Ear for Pure Tones. *Phys. Rev.*, 31:867-875, 1928.
16. Egan, J. P., and Klumpp, R. G.: The Error Due to Masking in the Measurement of Aural Harmonics by the Method of Best Beats. *J. Acous. Soc. Am.*, 23:275-286, 1951.
17. Warren, J. M., and Egan, J. P.: On the Accuracy of the Method of Best Beats for Determining the Intensity of a Tone. *J. Acous. Soc. Am.*, 23:111-113, 1951.
18. Causse', R., and Chavasse, P.: E'tudes sur la fatigue auditive. *Année psychol.*, 43-44:265-298, 1947.
19. Guild, S. R.: Safety Standards for Industrial Noise. Third National Noise Abatement Symposium, Chicago, 1952.


# Most Valuable Asset

Not their products, not their trade-marks, not their patents, not their plants and machinery, not even their organizations, are the greatest assets of our business enterprises. In a fundamental sense, the most valuable single asset of American business is the responsiveness of the American people. Ours is the most responsive public in the world. It is open-minded, curious, alert to change, receptive to improvement, adaptable, and venturesome. It is quick to try the new and to adopt that which it finds simpler, quicker, more useful, more convenient, more attractive or glamorous, more enjoyable, more satisfying, or more exciting. Without this quality of public responsiveness, our steadily expanding economy would have no soil in which to grow. It is this national characteristic which explains our economic system; for responsiveness is the foundation of our American standard of living, upon which that system is based. It is not only the greatest asset of American business; it is perhaps the greatest economic asset of the American people. —*Management Briefs* No. 61, in *Management Review*, April, 1954.

# Management's Stake in Health Construction

EDWARD J. STIEGLITZ, M.D., F.A.C.P., Washington, D.C.

THE HONOR and privilege of delivering the first Clarence O. Sappington Memorial Lecture are deeply appreciated. Like every privilege, it is inseparable from an equivalent responsibility. I am keenly aware of the obligation to contribute some worthwhile ideas in keeping with Dr. Sappington's high ideals, progressive thinking and insatiable desire for service. He saw beyond the immediate present and was deeply concerned with progress.

Industrial medical services must progress and expand. No area of human activity can afford to become static or fixed. Growth is an essential and intrinsic part of life. Our problem is essentially one of planning the *direction* of growth for the maximum benefit. This is not an idealistic approach, but clearly pragmatic. The concept I shall propose is simply good business because management, stockholders, employers and the public at large all profit.[1]

The primary objective of industrial health services is to increase work efficiency, and thereby reduce costs and enhance production. In its development, industrial medicine has passed through several phases, continuously expanding its objectives. The earliest phase was limited to surgical and medical repair and rehabilitation of employees injured on duty—patch work. Later came recognition that injuries could be *prevented* by control and improvement of the work environment. Thus industrial hygiene and safety programs were born. Supplemental to environment control the practice of periodic checks on the health of workers in known hazardous occupations was introduced. Thirdly, industrial medicine began to realize that control of the environment was not enough; that the human element was also significant in accident and disability costs. Thus pre-employment and preplacement examinations were introduced to insure fitting men into appropriate jobs. Preplacement examinations, now an accepted routine in personnel practices, were long resisted, particularly by labor, until it was demonstrated that both management and labor gained thereby. At present placement procedures have become far more complex than originally conceived. At first the focus of attention was upon physical defects which would predispose to accidents or compensatable exacerbation of pre-existing disorders. More recently elaborate aptitude tests, careful analysis of the specific requirements for specific jobs and the classification of work required, have yielded a profitable degree of accuracy to the process of placement.

A further development in the growth of industrial medicine has been the introduction of periodic medical examinations, particularly of key personnel. By key personnel I mean those individuals who by reason of their special skills, training, and/or experience are not readily replaced. This will, of course, include key figures not only in management but also scientists, engineers, designers, and several other categories. The purpose of these periodic examinations has been to detect chronic progressive disease in its incipiency, and thus institute therapy before the disorder produces irreparable and irreversible harm. Such diagnostic studies, searching for occult disease are particularly applicable to the more mature for two reasons: maturity is requisite for the experience which produces the judgment and skills which make for especial value to the organization, and because the disorders common and characteristic of later maturity are typically insidious, largely symptomless in their early stages, silently progressive, and ultimately lead to long periods of disability. Thus early detection requires search before symptoms become obvious; early detection is requisite for effective treatment for later damage is irreversible.[2] That such a policy is profitable is confirmed by the continuing expansion of this service of industrial medicine.[3]

Early detection of insidious disorders and arrest of their progression can do, and is doing, much to enhance and prolong work efficiency. It is an essential element of good medical practice. Its objective is to increase the spread between disease, disability and disaster, and thereby prolong usefullness. But, this is *not enough!* Medicine has something even more potentially profitable to offer.[4,5]

It should be unnecessary to emphasize the value and role of *men* in industrial production. Industry uses raw materials, machines to con-

---

This Lecture, by DR. STIEGLITZ, was the first formal presentation at the Thirty-Ninth Annual Meeting of the INDUSTRIAL MEDICAL ASSOCIATION, Hotel Sherman, Chicago, April 27, 1954. It was followed by MR. WILSON'S paper (pages 205-208), and that, in turn, was followed by DR. BENNETT'S (pages 209-212), concluding the Tuesday afternoon program. The CLARENCE O. SAPPINGTON MEMORIAL LECTURE is sponsored by the OCCUPATIONAL HEALTH INSTITUTE.

vert these into finished products, and men to operate these machines, to transport both unfinished and finished products, and to sell the latter. Men not only operate the marvelous machines of the present era, but conceive and design them, devise new and more effective methods of conversion, discover new materials and processes. Men are the most valuable, most versatile, most requisite, and most expensive instruments of industry. Their efficiency, therefore, must be a primary concern of management.

Men are costly. They are expensive not only as to their wages or salaries, but also because of the high costs involved in training them. I need not elaborate upon the costs of developing a skilled machine operator, a supervisor or a research chemist or engineer.[3] Many of the marvelous automatic machines of today can do certain things more rapidly, more accurately, and more cheaply than men can without them, but it must be remembered that, though these instruments have superlative skill in one function, the most precious and irreplaceable asset of men is their multiplicity of skills. The machine of necessity sacrifices versatility for efficiency in one operation. Man's versatility is indispensable to progress.

The supply of *efficient*, versatile workers is not inexhaustible. Despite our rapid population growth, our human resources are not unlimited.[6] Quantity does not necessarily parallel quality. The implications of increasing longevity, resulting in dramatic and significant changes in our population structure, the urgent problems of the chronic progressive disorders of later maturity, and retirement *versus* utilization of the aging make the questions of aging most pertinent and urgent to industrial medicine.[7] It must not be forgotten that skills increase with practice, as judgment does (or should) with experience, and that time, and therefore age, is requisite to such development.

Therefore, *anything which impairs the work efficiency of men is expensive, wasteful, and undesirable.* It is a primary function of industrial medicine to reduce this waste to a minimum, and a primary function of managements to support and encourage their industrial Medical Departments to expand their activities in this direction. Even with the present limited perspectives and activities the accomplishments of industrial medicine are remarkable. Today only about 5% of absenteeism is due to *on the job* sources!

But absenteeism is still a sadly wasteful extravagance. It is estimated to cost business nine billion dollars per year.[3] Ninety-five percent of absenteeism of eight calendar days or longer is due to sickness and non-industrial injuries. Recent statistical analyses indicate that for certain disease categories absenteeism is increasing rather than diminishing.[8] For males the over-all rate for 1950 (116.8 absences per 1000 persons) was slightly less than the average for the previous 10 years (117.7); among female workers the 1950 rate (258.4) is 13% *above* the 10-year average (229.3). The 1950 rates for cancer are 83% above the 10-year average, diseases of the heart were 32% greater, and hernia 29% higher. Reduced in frequency are respiratory infections and tuberculosis. In 1952 over-all rates for absenteeism were even higher: 130.9 for men and 344.9 for women.

But the appalling costs of absenteeism are but part of the story of waste of human resources.[9] Of probably greater importance are the additional and unmeasured losses in production due to impaired efficiency of personnel *not sick enough to be absent* but who accomplish but a fraction of what they should be capable of doing if their health were optimum. For every employee absent because of illness there are probably at least a dozen present who, because of impaired health, are merely going through the motions of doing something. Among these are the conscientious fools with acute respiratory infections, generously spreading infection among their co-workers. The Common Cold Foundation reported in March, 1953, that an average of seven million persons are *incapacitated* each day of the year because of the "common cold." An estimate of 20 million infection spreaders on the job is not unreasonable. These colds are at least recognizable, and employees and employers both are aware of the handicap. Of even greater magnitude are the losses engendered by inefficiency due to impairments of health so subtle and insidious that the employee is unaware of illness. The friction drag of chronic malnutrition, migraine, anemia, hypertensive disease, low-grade infections, diabetes mellitus, the psychoneuroses with their consequent disorders such as peptic ulcer, psychogenic fatigue, etc., and the impairments consequent to arteriosclerosis of the brain, is at present immeasurable, but it is certainly immense and in part unnecessary. It has been estimated that only half of the diabetics in the United States are aware that they have diabetes.

No production or plant manager would tolerate such a situation as applied to the machines and tools being used in production. Much effort is expended to maintain machines in good running order, to prevent costly breakdowns and to increase the efficiency of these instruments. Machines are not only maintained at or near the maximum efficiency when they are new, but are often overhauled, modernized and improved to increase their effectiveness. The same principle can, and should, be applied to men.

Health is relative. It is never absolute. There can be no sharp line of distinction between able and disabled. Work competence is as relative as health, and as variable. In many respects work efficiency is dependent upon health. Unfortunately, most laymen, and still too many physicians, think of health in terms of the antiquated definition as "that state of being existing in the absence of demonstrable disease." This is a wholly inadequate definition. It is like defining beauty as the absence of ugliness! Let me propose a modern definition of health. Perfect health is that "state of being in which all the functional capacities of the organism, both somatic and psychic,

are at or near the maximum we can expect for the species." It should be obvious that such ideal or "perfect" health *is unattainable even in the absence of disease.* Like infinity, optimum is approachable even if unattainable. Health is not only always relative but always asymmetric. It is affected by age or maturation. Even in the absence of disease, the youth who is able to run 100 yards with optimum speed (a somatic capacity) has not as yet reached his optimum capacity in judgment. By the time he has attained even adequate judgment, his capacity to run will have depreciated considerably.

It is important to distinguish between "normal" and optimum." Normal means average. How many here would be content to be told that they had a normal or average intelligence? Yet you are all content with being average in health because you lack awareness of the potentialities of approaching optimum health. There isn't a person here, or elsewhere, in maximal or optimum health! How many here, for example, bound out of bed with vigor and enthusiasm and yodel in their cold shower early each morning? I can't yodel either.

The relativity and asymmetry of health imply that there is always room for improvement. It is possible to construct greater health, and therefore efficiency, in those relatively well, even in the absence of specific disease. The term "constructive medicine" is applicable to this objective.[2,4,5,7] Constructive medicine is more than preventive medicine which seeks to prevent specific disease entities. Health maintenance, though a significant advance in philosophy over waiting for disablement to demand efforts toward the reconstruction of health lost by disease, is still largely focused on disease or the maintenance of a *status quo.* Health maintenance has as its foundation the early discovery of *disease* and the prompt institution of therapy, but it assumes that in the absence of evidences of disease the individual is healthy. So he is, but only relatively so. The clinical approaches to health maintenance and health construction are quite different. In the one instance the focus of attention is upon the discovery of disease[10] and in the other the focus of attention is upon the mensuration of health.[2,11] Both have their place. The value of the former has been demonstrated by periodic examinations of executives and others; the potentialities of the latter have not as yet been fully explored in practice.

The potentialities of constructive medicine, however, have been revealed in the practice of pediatrics. Since the initiation of attention to well babies as well as to the sick, better nutrition, better hygiene and education of parents, more has been accomplished than saving of lives. Modern pediatrics produces larger, and particularly healthier, children and young adults than those who survived the hazards of infancy 50 years ago. This has been a major factor in the increased longevity of our population which now raises so many complex problems.[2,4,7,11] Mental development has also been improved by better and more readily available education. Unfortunately, cultivation of emotional maturation has not kept pace with efforts toward cultivation of physical health and intellectual growth.[13]

Construction of greater health in those only relatively healthy (directed toward approach of the optimum) can and does pay the following dividends:

1. Increased physical and mental efficiency.
2. Consequently, increased productivity per hour or day.
3. An increased sense of well being. This reduces emotional tensions and consequently diminishes the likelihood of psychosomatic illness such as alcoholism, peptic ulcers, hypertension, hysteric behavior, etc.
4. Less acute illness, because of stronger barriers to resistance or defense, and less fatigue. This applies to infective, toxic, and psychic disorders alike.
5. An increased endurance.
6. An increased capacity to learn.
7. Decided improvement in the prognosis of acute illness or injury. This means quicker repair following injury or illness and therefore less time lost in absenteeism, especially for older individuals. It is axiomatic that the outlook in an acute illness of an older person is largely determined by the pre-existing health of the patient.
8. Enhanced longevity with greater depth and breadth as well as length of life.

Constructive medicine implies anticipation. Anticipation is applied foresight. This requires recognition of potentially hazardous situations, conditions, depreciations, etc. Thus an exceptional clinical acumen is demanded of those physicians attempting constructive medicine; the ability to *foresee* the consequences of habits, of emotional stresses (and to detect these before the patient is aware that he is heading into trouble), of intoxications and the like is of paramount importance. The evidences of potential hazards are subtle, indirect, and obscure. Equally necessary is an exceptional comprehension of the causation of illness and health depreciation.

Anticipatory or constructive medicine is intensely concerned with causation. It can accomplish little or nothing unless it recognizes causative forces before they do damage. And even in treatment after damage is manifest, the eradication of causative influences is the most essential element of therapy. It does not suffice to treat a sore heel (I mean the kind that fits in a shoe) with antibiotics, poultices, etc., if we leave the nail in the shoe.

Causation is always multiple. It would greatly forward our progress if the singular of the word cause were wholly deleted from our vocabulary. No one will ever discover "the cause of" cancer, hypertension, diabetes, divorce, floods, fires, or wars. There are invariably multiple causative factors. Causative influences may be classified, with clarification of the problem of causative analysis, into three P's;

1. Predisposing factors.
2. Provoking factors.

3. Perpetuating factors.

These various factors have quantitative as well as qualitative implications.[12] Their weight or relative importance will vary in different instances. This classification is a most useful intellectual tool in attempting to comprehend the reasons for *anything*—even why profits are not what they might be!

The basic instrument of health construction is the periodic health inventory and consultation. This must not be merely a search for evidences of disease, no matter how thorough, but must include an evaluation or mensuration of health as an asset, together with a most painstaking search into the history of the patient for habits, dietary, experiences, intoxications, use of leisure, etc., for potential sources of avoidable stress, strain, or injury.

Unfortunately, there has been very little study of health *per se*, and our methods of measuring health are crude and sadly inadequate. There is an urgent need for extensive research to find techniques applicable to the measurement of health. Clearly these must involve stress procedures because health involves *reserve* capacities which are not revealed without stress. To test an automobile engine going *down* hill tells us little or nothing of its efficiency. We must study the engine's response to going *up* hill. The importance of such researches can not be overemphasized. Men, trained men, are and will continue to be our greatest resource. Making men more fit in health is not dissimilar to the results of education in increasing knowledge and intellectual vigor.

The health of key personnel is of especial significance. These are the blue chips. The primary objective of applying constructive medicine to these people is to increase their effectiveness. The job a man does is, or should be, more important than the man himself, especially if it involves great responsibility. Unfortunately, the idea of seeking medical guidance is often abhorrent to the rugged individualists who are often the men that count the most. They frequently resent the idea that their health is anybody's concern but their own.[4,14] Nevertheless, their health and efficiency are the concern of personnel management in the same sense that the efficiency of a fleet of trucks or a battery of expensive and complicated machines is part of plant maintenance. We do not grease our cars and use high test gasoline for greater efficiency because we feel any particular love for them, but because we want to get as many miles as possible without expensive breakdowns. The simile is apt, for a minor anemia can be likened to operating with low-test gasoline.[7] Brain power is the most precious part of man power. This brain power can be improved and made to last longer by the application of constructive medicine. Service such as this, associated with extensive research into methods of health mensuration can go hand in hand and yield a great return.[15]

In summation, let me express the hope that I have given you a broader conception as to what health is and means. Health is always relative, even in the absence of disease. There is always room for improvement. It is possible, feasible and potentially immensely profitable to encourage the *construction* of greater health and thus enhance human efficiency. Greater competence means enhanced productivity and profits to all.

(1726 Eye Street, N.W.)

## References


1. Stieglitz, E. J.: Senescence and Industrial Efficiency. Proceedings of the November 10-11, 1943, Meeting of the Industrial Hygiene Foundation of America.
2. Stieglitz, E. J. (Editor: *Geriatric Medicine*): Medical Care of Later Maturity, Ed. 3. J. B. Lippincott Company, Philadelphia, 1954.
3. Page, R. C.: Industry Calls in the Doctor. *Harvard Business Review*, 31:109 (September) 1953.
4. Stieglitz, E. J.: A Future for Preventive Medicine. N.Y. Academy of Medicine Series. Commonwealth Fund, N.Y., 1945.
5. Stieglitz, E. J.: Preventive Geriatric Medicine. *Journal Lancet*, 65:60 (February) 1945; Constructive Medicine. *Science*, 10:313 (October 6) 1944.
6. Frank, L. K.: Human Conservation. Nat'l. Resources Planning Board, U.S. Government Printing Office, Washington, D.C.
7. Stieglitz, E. J.: The Second Forty Years. J. B. Lippincott Company, Philadelphia. Revised, 1952.
8. Gafafel, W. M.: Industrial Sickness Absenteeism, During 1950. Public Health Reports, 66:1550 (November 23) 1951; *ibid*, 65:1556 (November 24) 1950; *ibid*, 68:1052 (November) 1953.
9. Plummer, N., and Hinkle, L. E., Jr.: Medical Significance of Illness and Absence in an Industrial Population. *Ann. Int. Med.*, 29:103 (July) 1953.
10. Baker, J. P., Ballou, H. C., Hall, W. T., Lemon, W. E., and Morhous, E. J.: Executive Health Examinations. *Southern Med. J.*, 46:984 (October) 1953.
11. Stieglitz, E. J.: Chronic Illness and Senescence. *J.A.M.A.*, 150:481 (October 4) 1952.
12. Stieglitz, E. J.: The Causation of Disease. *Scientific Monthly*, 58:467 (June) 1944.
13. Stieglitz, E. J.: The Meaning of Maturity. J. B. Lippincott Company. In preparation.
14. Flynn, J. T.: Periodic Health Examinations. *J.A.M.A.*, 154: 702 (February 20) 1954.
15. Giberson, L. G.: Emotional Problems in Industry. *Industrial Canada*, 54:56 (March) 1954.


# Medical Fitness

WE NOW send a staff physician to the home of any employee who is absent for five days. If the sick employee wishes, our physician will prescribe for him. If he is under the care of a private physician, we request a report from the attending physician. We have found that this method has reduced absenteeism and unnecessary sick benefits.

—From an article by Harold Brandaleone, M.D., Medical Director, Third Avenue Transit System, in *Taxi Weekly* (New York), April 7, 1954.

# Health Insurance and Industry

A. M. WILSON, Underwriting Manager
Accident and Health Department
Liberty Mutual Insurance Company

THE Accident and Health Insurance industry presently is being sorely pressed not merely for its misdeeds but also for its deeds. Newspaper and magazine writers are berating the underwriters for their reluctance to assume known losses, and for not entering into indissoluble contracts for better or worse till death do us part. Labor contracts are being negotiated and renegotiated day after day, through which the underwriter is subjected to an inquisition, not merely as to what protection he has to provide, but what he is going to do with the money that remains after all liabilities are liquidated, completely unaware that in today's market the hope of a margin of profit above losses is almost tantamount to betrayal of a public trust. State insurance laws seek to impose upon the underwriter not merely the scope of the protection to be afforded, but to specify the very words in the contract through which his intent must be expressed, under threat of a stint in jail. He is berated as a scrooge attempting to make a profit by traffic in human misery, while, at the same time, he is taxed two and three and more percent, not on the profit he makes, but on the money he collects from the people with which to pay benefits to the unfortunate. In recent years, political pressures have forced him, in spite of the decreased value of the dollar and higher costs of everything, to give more and more protection for the same dollar, under threat of confiscation of his livelihood by government monopoly.

In Washington efforts are being made to create a multi-million dollar fund with which to persuade the underwriter to extend himself still further toward fiancial loss in the hope that he will be retrieved from a fall overboard by a self-supporting reinsurance fund of the Federal government. Through all this he knows that the foundation of industrial America is the profit motive, that when an industry fails to make a reasonable profit for its stockholders, or, in case of a mutual insurance company, a profit for its policyholders, it goes broke. As an American business gone broke it intensifies the misery of those whom it promised to support in misfortune, it ruins the livelihood and hope of those thousands of men and women who have wedded their economic lives to the service of the industry, it dissipates the years of toil and sacrifice of those who furnished the capital to pursue a legitimate American business, and it robs the community in which the business is located of the stable economic support from which flow its friendships, its recreation, its social life, its schools, its hospitals, its cultural institutions, and its churches.

Perhaps that is why I, being an underwriter, agreed to speak to you here today. In the principles you espouse, there is hope for men like me, hope that the path we are treading can be rerouted to an objective based upon the most primitive principle, that the only true insurance against loss is the removal of the cause of loss. If a thief steals one of your horses every night, no sane man would counsel you to buy a new horse every day to make the thief's work easier. If an arsonist burns down every house you build, the answer is not to build new houses to please the arsonist. If a rapist regularly ravages your wife, you would hardly consider getting more wives to make the rapist's life more satisfying.

Now let's apply that principle to American business. When a man goes to work for an employer, everything that man is and has gets tied into that business. His family life, the food his wife and children eat, the clothing they wear, the house they live in, their present and their future are contingent upon the wages that come from that job. To make that job possible the employer has invested his funds and the funds of stockholders in machinery and equipment, in excess of $10,000 worth, on the average, for every job. If the business makes a profit, the employer, the employee and the stockholder, each in his own way can attain his individual hopes, aspirations and purpose. If the business fails to make a profit, each in his own way suffers destruction of his hopes, his aspirations and his purpose. The interruption of efficient procedures often repeated destroys profit. Interruption may be total, such as destruction of the plant by fire. It may be partial such as a breakdown of a machine vital to the completion of the finished product. It may be both through injury and illness of the brains and human spirit, without which there can be no true creations of wealth through the machines. Too often we forget that the shiny products that make up our material life are in truth but representations in steel and wood and fibre of the brains, the sweat, and the aspirations of the thousands of people who aided in bringing the product to us. Physical injury and illness of the workmen, and, what is more important injury and illness of the spirit from which the creation of wealth flows, stands today as one of the major sources of interruption to the smooth flow of American life, as it is created out of the profit motive.

Many years ago good management learned of the hazards of complete interruption. He does not merely buy fire insurance, but rather he uses proved fire prevention techniques so a fire does

not happen. While he sets aside funds with which to replace worn out machinery and equipment, he nevertheless uses every proved practice to keep that machinery in good working order so that it may serve him well, without costly breakdowns, years beyond the date it would normally be junked.

WHILE engineering of machines has made vast strides forward, the management of the human element in production has lagged far behind. Without intent to minimize the fact that a human being is a creature of personal dignity, in himself immeasurably greater than any machine, it is nevertheless true that the human being in relationship to industrial production has a measurable value in dollars and cents. The human element in production averages from 70% to 80% of the total cost of production. When you consider the amount of money spent to protect material assets of plants, machinery and equipment, which represents but 20% to 30% in the creation of wealth, and compare this with the money spent to protect the human assets which represent 70% to 80% in the production of wealth, the conclusion is warranted that we cannot see the woods because of the trees. Industry might counter by pointing out the great progress that has been made in preventing bodily injury on the job. As a matter of fact, the human being is safer on the job than in his own home. This achievement, however, only serves to increase the mystery involving the human element in production. Industrial injuries cause only about 10% of the total loss of productive time from disablement of the human being in production. Non-occupational accidents account for another 5%. Sickness causes 85%. Why then do we concentrate preventive measures on the potential 10% loss and forget about the 85%?

There are I suppose many ways of rationalizing this situation. Workmen's compensation laws have placed a dollar value on occupational injury. The causes of accidents are in themselves objective and can in large part be minimized and eliminated. Granted that all this is true, it cannot account for the paradox encountered in all too many plants where nurses are put on the payroll, held confined in a germ-free cubical located in an isolated spot in the plant, for the purpose of assisting a physician in bandaging minor injuries arising on the job. Even more surprising are the many managements who spend large sums of money to procure competent medical staffs, then issue orders that no case other than an occupational accident case is to be treated by the medical staff except to call a cab and send the employee home.

There was a time in the past when such a procedure might have been condoned on the theory that concern of management in care of other than an occupational injury might produce a legal prejudice in favor of a board ruling that the compensation law was involved. Thus, a compensation loss might result by indirection. That theory has, however, long been outdated. Today, not by law, but by fact, the health of the individual is as much part of making a profit out of productive enterprise as is industrial safety.

In the first part of this century, group life insurance was born. In the 20's loss of wage insurance because of illness was introduced. In the early 30's hospitalization insurance was added. In the late 30's coverage for surgical fees was adopted. In the early 40's coverage for medical fees other than surgical fees was added. In the late 40's coverage was introduced against very high major medical expense. In spite of all this the social need is still being interpreted to be unfulfilled, and the government is seeking to provide through law the necessary financial guarantees to induce underwriters to expand coverage still further to encompass the problems of medical costs arising from the aging process, coverage for the retired, and the medically indigent.

The history of these forms of protection is that they become tied, one after the other, into the labor contract, with industry paying a large part of the cost. It is a common practice today to see industry paying three and four times more for employee health insurance than it is paying for workmen's compensation insurance. The loss ratios on the health insurance are running from 85% to 90%, while compensation loss ratios average from 60% to 65%. And American industry, through which our wealth is created, pays the bill. Even if the government takes over completely, industry will have to support the plan through either increased taxes or increased wages to cover the taxes imposed upon the employee. In spite of these facts, so obvious that any novice in business can see them, it is amazing to witness the tremendous amount of missionary work that has to be done to persuade a large segment of industrial management to spend even a few dollars in a constructive health maintenance program. Employers, who have spent thousands of dollars in safety programs and have seen their costs for compensation losses lowered many times the cost of the safety programs, enter into employee group insurance plans, under which year after year the limits of coverage are extended, the coverage broadened and the loss ratios increased. The result is an ever increasing reward for sickness, and a penalty for health. Why not rally behind prevention of loss, as is done in fire prevention, damage prevention, business interruption prevention, theft prevention, and accident prevention?

IN DISCUSSING this enigma with many men in industrial managements a great variety of answers are encountered, such as, "The employee's health is his own affair." "The unions will not permit us to have its members examined medically." "Management has no control of an employee while he is off the job."

It seems to me these answers are all rationalizations of conclusions based upon much more fundamental causes.

Without pretense on my part to establish myself as an authority on this subject, I would like

to give you six observations which may throw light on the problem.

1. Preventive medicine as a tool in efficient industrial medicine is new. To date prevention in medicine has concerned itself with contagious and communicable disease and has been practiced primarily through government public health agencies. Their record of achievement in eliminating epidemics is outstanding. In fact, having built up a vast and far-flung governmental agency, they have been so successful in eliminating and controlling epidemics, that they have worked themselves out of a job. To keep their organization going they have now declared industrial accidents and traffic accidents to be within the scope of public health. But they proved prevention can work. Because the application of preventive medicine techniques in industry has not as yet had time to build up similar proof on a national basis, the adoption of an industrial medical program by management has to be based to a high degree on faith. Faith is the staff Columbus had to back his job of discovering America.

2. To develop an idea from a belief to a science takes time. The one-lunger horseless carriage in Ford's imagination was a far cry from today's models. When, however, medical men are able to subject prevention ideas to a synthesis, under which the sum of their individual knowledge and experience is coordinated into a unified body of knowledge, leading logically from cause to effect, faith will be replaced by evidence. That synthesis is even now going on in the schools, recently developing courses on industrial medicine. The schools of today make our scientists of tomorrow. Tomorrow will be good for industrial medicine if teachers remain enthusiastic.

3. Human nature is prone to leap from a point of a little knowledge to know-it-all-ness. An adult is inclined to listen patiently and admire a young nine year old play his fiddle after the first lesson. Few adults would immediately advocate a Carnegie Hall recital. Why then, claim the impossible for science. Recently I read a treatise on what the Medical Department should learn about an employee in a preplacement examination. If all the things could be accomplished in a preplacement examination that this treatise claimed, all our employee relations would be solved. Let's at least, in the beginning, stick to the earth, muddy and rocky as it may sometimes be. The human race has not progressed to the point where study of Einstein is considered proper subject material for kindergarten. Claiming to be able to do the impossible should not be part of a sound, down-to-earth preventive medical science.

4. Opposition of local medical men to industrial medicine is a factor. Only too often the man in management considering the adoption of an in-plant medical program will mention his intent to his personal physician. His physician may be opposed to industrial medical practice for either selfish reasons or out of prejudice, and may use the old rhubarb that only the physicians without a true interest in curing the sick go into industrial medicine. The answer to this is proper stature alongside the other medical specialties of industrial medicine in organized medicine.

5. Failure of the industrial physician to attain a proper level of authority in management. The organizational lines of American industry are a direct reflection of management interest and concern. At the top is the executive who holds his job by his ability to select subordinates who know their respective business. Next to him on the one side is the production man, and on the other side the financial man. There was a time in our economic life when this triumvirate ruled supreme. All personnel matters, were purely secondary, handled by a sub-sub subordinate of the production man, whose only qualifications were a sufficient age not to become involved in a paternity suit, a grandfatherly attitude toward all employees and the ability to interpret all decisions of the triumvirate, no matter how harsh or unreasonable, as the all-wise effusion of a divine oracle. In many industries that has changed. Today, in good management, the man responsible for personnel holds equal status with the production manager, and the financial man. Where such is the situation, and the industrial physician is given a direct line of authority from and to this man, and if this man is an able man, the practice of industrial medicine can be highly successful. Where, however, the personnel man, having stature in top management, is not a qualified man, or if he does not have stature, whether qualified or not, the life of the industrial physician will be one horrible nightmare of frustration, with ulcers at age 50 and his head chopped off by the financial man at age 55. To bring industrial medicine into its own it is as necessary to place it in its proper management level as it is to know its scientific content.

6. To be effective the preventive program must be positive and definite, understandable to the management and worthy of cooperation by employees. Unless the plan is positive and it is demonstrated to employees that cooperation with it will enrich their own personal lives, the activities in the plant on the part of nurses and the physicians will be interpreted by the employees as unwarranted interference with their personal lives, or as an activity of a bunch of old hacks trying to win loyalty for management by passing out cheap advice and free pills, or at its worst, a spy system attempting to discover the personal failure and vices of the individual worker so they can be made known to foremen and supervisors. Too often, industrial medicine in a plant is not planned. The doctor is employed, the attack is made in all directions, without rhyme or reason, to the point where the employees find it of greater value to stay home and feign sickness than to come to work. A positive program, however, worked out just as a safety program is worked out with labor and management cooperation can be successful.

I TOLD you in my opening remarks that the motive for my being here stemmed from my

ability to create controversy. All I know about industrial medicine is what I have heard and read and seen. But the logic of my theme is still the same. Unless we can, through industry, harness the knowledge of medicine to prevent illness, to conquer disease, to control the damaging effects of the aging process, we will crumble the financial structure of industry by attempting to impose upon it an ever-increasing cost for medical cure. The practice of spending thousands of dollars in industry for cure, without concentrating every known tool of prevention just doesn't make sense.

This isn't the first time in the history of industrial management that practices were followed that do not make sense. But the history of nonsense in industrial practice has always been the same. Either sense is reintroduced and the result changed to dollars, which profited everybody, or the individual establishment closed its doors, to create another monument to unwise management. Unfortunately, the rapid development of ideas foreign to our way of life, may not again permit such monuments to be created for individual unwise managements. The end may easily be first curative medicine by government, followed by death of industry as we know it today. There are some who even now would welcome such an end. I don't. I think you don't. Now is the time to make prevention work. If we do the future will belong to preventive medicine. Better health for the American people will be the dividend payable. With this health they can enjoy the dollars now lost through the purchase of cure.

I ask you, isn't it a nobler objective to keep a man in a position in which he can buy steak, eat it, and feel like he owns the world, than it is to put a man into a position in which he can pay for a hospital room, eat a pill, and feel grateful to all his associates.

(175 Berkeley St., Boston.)

---

## Cancer

CANCER—in reality a multiplicity of diseases—has, in certain forms, long been known to be related to occupation. We are all familiar with the scrotal cancer of chimney sweeps and the osteosarcoma of radium watch-dial painters. American medical textbooks rarely mention other forms of occupational cancer. Investigation in other countries has far exceeded ours in this field. We are beginning to suspect that habitual smoking of an excessive quantity of cigarettes contributes to carcinoma of the lung. Certain occupations also predispose to its development. More than half of the miners in certain European mines containing large quantities of radioactive ore, die of bronchogenic carcinoma. Workers in certain chromate ores in our middle western states are 16 times more likely than members of the general population, to incur lung cancer. Among 518 patients with carcinoma of the lung studied by us, many more than expected had been employed as welders and as electric bridge-crane workers, who work at ceiling level above vats of molten metal. Public health and other investigators are continuing to study the relationship of various occupations to this rapidly increasing form of cancer. A recent study of environmental carcinogens in the Los Angeles area has established the fact that benzpyrene, one of the most carcinogenic substances known, is in the atmosphere of that city and is mingled with the soot on the walls of its traffic tunnels. The origin of this contaminant is being sought. In London, England, benzpyrene has also been found in the atmosphere, where its presence is attributed to the burning of coal rather than oil or gasoline. Thus, three probable sources of bronchogenic carcinoma are being investigated, and the relationship between these factors in our environment and the mortality rate is being determined.

—From "Preventive Medicine for the Later Years," by LESTER BRESLOW, M.D., in *Kaiser Foundation Med. Bull.*, September, 1953.

# A Psychologist's View of Retirement Problems

GEORGE K. BENNETT, President, The Psychological Corporation, New York City

IN RECENT years much has been said and written about the employee who reaches retirement age. Many articles have appeared in technical and popular publications dealing with various aspects of this topic. Some writers have concerned themselves with the adjustment problems of the retired individual, involving social status, financial arrangements, and the emotional acceptance of idleness or re-employment at an inferior level. Insurance companies have prepared advertisements encouraging younger people to purchase policies which envisage the "golden" later years financed by an assured income of $150 or $250 per month.

A recent approach is the concerted attempt by the National Social Welfare Assembly to investigate and develop criteria for retirement other than chronological age. Underlying this is the premise that many persons who reach the age of 65 are still employable and would prefer continuance of their present jobs and earnings to retirement at a diminished level of compensation.

The fixed retirement age has become the target of much critical comment. In August, 1950, at the first meeting of the National Conference on Aging (sponsored by the Federal Security Agency), it is reported that one committee attempted to pass a unanimous recommendation against compulsory retirement under any circumstances.

The National Social Welfare Assembly has organized a National Committee on Aging, consisting of some 200 members drawn from all portions of the United States. Committee members include businessmen, social workers, union representatives, educators, and smaller numbers of physicians and psychologists. The first meeting of the committee was held at Arden House, Harriman, New York, in 1952. The majority decision was that compulsory retirement at a fixed chronological age was both socially undesirable and economically unsound.

As a consequence of this decision, a grant was made to study criteria for retirement other than chronological age and to encourage industry to consider alternate methods. I was among those attending the Arden House conference and subsequently was invited to serve on a technical subcommittee. In spite of my doubts as to the present feasibility of a flexible retirement age for industry in general, I accepted and have attended many meetings in this connection.

It is not difficult to make a strongly appealing case against a fixed chronological retirement age. All of us who deal with people are aware of the fact that deteriorative processes move at varying rates not only for different individuals but with regard to particular functions within the same individuals. At the most frequent retirement age, 65, there are many who are ready, willing, and, to themselves at least, able to continue their customary employment.

It is evident that the retired person usually must adjust to a markedly lower level of income. This diminishes his purchasing power and has a negative effect on business in general. Furthermore, there is evidence that cessation of regular work is often followed by loss of self-regard and by rapid physical and mental decline. The proponents of flexible retirement, which generally means extension of working life rather than an averaging of earlier and later retirement, cite these and other reasons in what seems to me to be primarily a humanitarian attitude toward the individual.

Several physicians specializing in gerontology have described in some detail the physiological changes characteristic of advancing age. Dr. Nathan Shock has written both technical and popular articles in this area. Recently the syndicated medical writer Dr. Walter Alvarez has reported in newspaper columns portions of Dr. Shock's findings.

Psychological studies of public attitudes concerning older people have been conducted, chiefly by Drs. Zuckman and Lorge, of Columbia University. These reveal the existence of popular stereotypes of the aged and a fairly general agreement that retirement from usual employment should take place in the middle sixties.

INFORMATION concerning the maintenance or deterioration of intellectual ability as measured by psychological tests is meagre. The British psychologist Vincent, summarizing published reports, comes to the conclusion that the decline of mean score on various intelligence tests with age can be regarded as practically constant, that this decline operates for both timed and untimed tests (provided they are influenced only to a minor extent by knowledge), and that the mean annual decline from age 21 to 60 is approximately three one-hundredths of a standard deviation. This may be illustrated in the following way: If a given type of test performance is found to at-

tain its highest level at age 25, an individual who is at the median when 25 (surpassing half and surpassed by half of his fellows of the same age) will at age 58 have deteriorated in ability so that he will excel only 16% of those who now are 25. Since other persons of his age have suffered similar declines, he will still excel 50% of those who are now 58.

It should perhaps be pointed out that intelligence tests are usually fairly effective predictors of the future success of young people in academic situations and are sometimes related to success at work, but the great preponderance of such evidence is based on individuals under 30 years of age.

Among the many articles, there are two which seem to present capable and considered discussion of the various facets and implications inherent in the current move toward flexible retirement programs. The first is a paper by George E. Johnson, Vice-President and General Counsel of the Teachers Insurance and Annuity Association of America. This is entitled "Flexible vs. Fixed Retirement Ages," and was read before the annual conference of the Life Office Management Association in September, 1953. The second is an article by Albert J. Abrams entitled "Should There Be a Fixed Retirement Age," published in 1953 as a portion of the New York State Legislative Report on Problems of the Aging. Each of these authors touches upon a number of obstacles which a flexible plan will encounter.

Johnson concludes with this statement: "So little is known today about the subject, and employment conditions vary so widely that any one of you is probably a better 'expert' in dealing with his own company plan than anyone can be whose knowledge is based on theory alone and a different work experience."

Abrams sums up in the following words: "My own belief is that it is in the best interest of industry itself to move up the compulsory or normal retirement age from 65 to 68, promptly. I think this will tend to eliminate the bulk of the nontheoretical criticisms against compulsory retirement based on age. I believe it is sound short-run policy, sound tactically. It will retain in production men and women still able to produce effectively. It will come closer to being a valid composite index of the point at which workers become marginal in productivity. It has sound precedents in mass production industries."

Those who propose a flexible retirement system generally pin their expectations upon some combination of three types of evaluation. The first is a medical examination which will reveal, it is hoped, the extent of an individual's deterioration and his availability for either continued work at his present job or his suitability for work at some other job. The second is the psychological examination, whereby tests are supposed to indicate, again, the extent of his deterioration and his aptitudes for continued work on either his present or some other type of job. The third is a record of his recent work performance, essentially a type of supervisory rating of the employee and his ability to continue, usually in this case, only on his present job.

I do not feel personally qualified to evaluate the current status of the medical examination, but I do venture to suggest that it would be an extraordinarily brave industrial physician who would undertake routinely the task of predicting that a given person will be able to perform at the normal level the activities involved in any one of a large number of different jobs. In the area of psychological testing, where I can speak with some authority, it seems that some tests exist which will aid in the diagnosis of marked states of deterioration. Others will help us in comparing the abilities of one individual with those of others of his own or of different ages with respect to a rather limited number of jobs. But there is no adequate set of measurements at this time which can be used with confidence in appraising the suitability of a given individual for retention or dismissal from his present job.

IT HAS sometimes been the custom of industry when faced with difficult decisions regarding dismissal to seek the assistance of a psychologist and perhaps the use of psychological tests to determine which individuals in a division which is to be cut back should remain and which should go. This is a situation which the prudent industrial psychologist avoids with the greatest skill at his command. While a good actuarial case can be made for tests in the selection of candidates for new jobs, it is very difficult to justify the use of such predictors in determining the adequacy of a man on his present job. In the instance where a person, removed because of incapacity from one job, is being considered for one or several other types of employment for which tests have demonstrated predictive value, there is some logic in administering these tests to the employee in order to determine the most appropriate placement. As a general matter, however, there simply is not a sufficient body of research data to permit entering with confidence into the area of evaluating the person whose continuance or dismissal is in question.

This leaves the third alternative: the opinion or rating of the supervisor as to the adequacy with which the employee performed his present work. Supervisory judgments are notoriously subjective. The employee who is rated by his supervisor is often judged in terms of the comfort and convenience of the supervisor rather than in terms of the worker's actual ability to produce. If the older individual is an object of sympathy and the supervisor feels that the company can well afford to support this person, the supervisor is very likely to give him an extremely favorable recommendation, even though the man's work may have suffered. In other cases the supervisor may react to the personality of the individual. He may have a warm feeling toward an employee whom he identifies with his own father, or he may have a strongly negative attitude toward an older person who seems to resent the authority exercised by a younger supervisor. While per-

sons outside the industrial scene may feel that the supervisor is generally the most competent judge of the work of his subordinates, administrators who have had extensive experience would hesitate long before hinging the operation of a retirement system on such opinion.

Those who are convinced that fixed retirement is bad tend to ignore other factors in the situation. These well-intentioned people emphasize the responsibility of the employer for the comfort and welfare of the employees and assume that in regarding the interests of the older employee, the employer is somehow discharging a duty to society. In looking at this aspect of the situation, they overlook alternate social responsibilities which may be of equal or greater significance. In the case of a company which has at any given moment a fixed number of jobs which it can economically fill, it can be assumed that if an older employee is retained, a new younger employee is not hired. When, as in the 1930's, unemployment was a serious national problem, the steps which organized society took were definitely in the direction of encouraging the retirement of older persons in order to provide jobs for the younger individual who was about to undertake the responsibilities of a family. The establishment of the age of 65 for the beginning of Social Security benefits and the withholding of such benefits from persons continuing covered employment are indications of this tendency.

A second attempt to limit the number of persons available for employment was in the deliberate encouragement of the extension of free education so that whereas 20 years ago it was not uncommon to find persons whose formal schooling terminated at age 16, we now have a convention of completion of high school training as a minimum before employment.

Whenever a really tight labor market exists, jobs for older people are easily obtained. If a fixed retirement age is the policy of a particular company, employees reaching this age and still needed by the company are kept on some "emergency" basis. Deliberate recruiting is set up among groups not ordinarily considered eligible for employment. Housewives are encouraged to work for a few hours a day, schedules being arranged to suit their convenience. To a considerable extent, the older employee is in the same class with the handicapped, the unskilled, and other marginal candidates for employment. If the market is good, he finds it easy to get a job; if there is a good deal of unemployment, he finds it difficult or impossible. There is a certain similarity between the problem of the retention of older individuals and that of the guaranteed annual wage. When times are exceptionally good, there is no need for a guaranteed annual wage nor is there need for any particular concern about the problem of older workers.

IT IS OFTEN said that the problem of retaining the older worker can be solved, at least in part, by transferring the person who has become incapable of efficient production at his regular job to some other job within the organization. This is exactly parallel to the situation that confronts those who deal with the problem of placement of the individual who is vocationally handicapped by reason of accident or disease. There seems always to be a shortage of available jobs which can utilize the remaining skills of such a handicapped individual. Furthermore, in the case of the older person, there is often the problem of the cost of retraining. When training costs are high, the prudent employer usually looks for a person with a fairly long expected tenure on the job, so that the cost of training can be amortized over an appreciable period of time. In the case of a person unsuited because of age to his past job and with the likelihood of further deterioration, there is a poor expectancy of long continuance and, consequently, more hazard in making the training investment. If the individual's prospects for continued employment on a job are reasonably good, then the employer may decide that the older person is as good a bet as the younger one.

*The older administrative employee* presents a different set of problems than does the wages and hours worker. There is constant pressure from those who are younger and lower placed for advancement within the organization. Such advancement can occur only as expansion or the retirement of older individuals creates openings into which the more capable younger people are able to move. If fixed retirement dates for older persons are adhered to, the younger individual can look forward, not to the certainty of advancement, but at least to the occurrence of opportunities for such advancement. This alone is an important aspect in the maintenance of morale among the younger members of the supervisory family.

It is equally important to consider the influence on company policy of persons who have reached normal retirement age and hold policy-making positions. There are many factors which cause the older person to be more conservative than the younger. People tend to persist in favoring the methods which prevailed during their formative years. In part this is due to the general resistance to change and in part due to the fact that the person enjoying administrative responsibility rarely has the opportunity to keep in the fore-front of technical progress. Such an individual is more comfortable dealing with methods with which he himself is familiar and may very well be suspicious of newer procedures which he has not had full opportunity to understand. He is likely to feel that a new venture, if it succeeds, can hardly add to his already distinguished list of achievements; whereas, if it should fail, it would be an indication that the quality of his judgment had declined with advancing age. The benefits of new methods, products, or processes are likely to occur several years after the decision to initiate such a venture has been made. The older person regarding his retirement as inevitable and perhaps not too far distant has a reluctance to take a chance, since he may well lose and can hardly

reap the benefits if the decision has been a wise one. There are numerous instances of companies in which the tradition has been that the older the senior executive, the wiser he was and in which subsequent events have shown this to be exactly the type of philosophy which caused younger and more aggressive competing companies to progress at the expense of the more traditional management. If the decline in intelligence test scores, mentioned earlier, is truly representative of the facts, there would be support for the point of view that the older person is not only temperamentally averse to novel ideas but may also have considerably greater difficulty in understanding them and their implications than the same person would have had earlier in his life.

If a flexible retirement age is to be applied to the rank and file worker, it is difficult not to have the same flexibility apply to the executive group. If the decision as to retirement is to be based on some combination of medical and psychological findings, an unusual amount of courage will be required on the part of the physician and the psychologist who are in the position of recommending abdication to the king.

IN SUMMARY, I am convinced that at the present time, the flexible retirement age is not a feasible process because of the lack of adequate techniques for evaluating the work potential of the older person, whether he be a production employee, a clerical employee, or a member of the administrative group. At the same time I believe that it is wholly possible that several years hence a sufficient body of information will have been amassed to provide a sound basis for recommendations as to continuance or retirement. Even at the present time companies which because of the labor market find it desirable to continue older employees do so and apparently are able to satisfy the demands of society and maintain the morale and opportunities for advancement among younger people. I cannot argue for a retirement age of 65 as opposed to that of 68 or any other reasonable figure. My personal preference is for the maintenance of 65 as having much social sanction with the provision for the optional retention of persons who attain the age of 65 and demonstrate through medical examination and possibly some psychological tests their potentialities for continued fruitful work. I believe that such extensions should be made on an annual basis with a review of each over-age employee at least once a year and with the understanding that his continuance is at the pleasure of the company and, of course, at his own option. In the end the welfare of the older worker will not be improved if his benefits are gained to the detriment of his employer.

The establishment of sheltered workshops would permit individuals with limited capacity to contribute to the general product of society and to their own economic independence and emotional satisfaction. Such facilities would complement in a practical manner the programs of industry and state in providing retirement funds and counseling prior to and at the time of retirement from the usual job. Many professional persons find it possible to work out a diminished schedule for later years. Others turn to advisory and consultative positions in which their long experience becomes available to younger people, while the ravages of age are acknowledged in the lessened work load. I should like to add that I am not unsympathetic to the point of view of those who feel the fixed retirement age is inequitable, but my opposition to this is due to my belief that at present we cannot provide an adequate substitute for the wholly objective counting of the elapsed years.

## References


1. BRECKINRIDGE, ELIZABETH LLEWELYN: "Effective Use of Older Workers." Wilcox and Follett Company, Chicago, 1953.
2. ESSERT, PAUL L., LORGE, IRVING, and TUCKMAN, JACOB: "Preparation for a Constructive Approach to Later Maturity." *Teachers College Record*, 53:2, 70 (November) 1951.
3. JOHNSON, GEORGE E.: "Flexible vs. Fixed Retirement Ages." Speech presented at Annual Conference of the Life Office Management Association, Cincinnati, September 21, 1953.
4. MATHIASEN, GENEVA (Editor): "Criteria for Retirement." G. P. Putnam's Sons, New York, 1953.
5. New York State Joint Legislative Committee on Problems of the Aging: "Enriching the Years." Legislative Document No. 32, 1953.
6. SHOCK, NATHAN W.: "Trends in Gerontology." Stanford University Press, Stanford, California, pp. 28-29, 1951.
7. STEINHARDT, ROGER W., ZEMAN, FREDERIC D., TUCKMAN, JACOB, and LORGE, IRVING: "Appraisal of Physical and Mental Health of the Elderly." *J.A.M.A.*, 151:378 (January 31) 1953.
8. TUCKMAN, JACOB, and LORGE, IRVING: "The Attitudes of the Aged Towards the Older Worker; for Institutionalized and Noninstitutionalized Adults." *J. Gerontology*, 7:4 (October) 1952.
9. "Attitudes Toward Old People." *J. Social Psychology*, 37:249, 1953.
10. "The Effect of Changed Directions on the Attitudes About Old People and the Older Worker." *Educational & Psychological Measurement*, 13:4 (Winter) 1953.
11. "The Effect of Family Environment on Attitudes Toward Old People and the Older Worker." *J. Social Psychology*, 38:207, 1953.
12. "The Effect of Institutionalization on Attitudes Toward Old People." *J. Abnormal & Social Psych.*, 47:2 (April) 1952.
13. "Experts' Biases about the Older Worker." *Science*, 115:2999, 685 (June 20) 1952.
14. "The Influence of a Course on the Psychology of the Adult on Attitudes Toward Old People and Older Workers." *J. Educational Psychology*, November, 1952.
15. TUCKMAN, JACOB, and LORGE, IRVING: "When Does Old Age Begin and a Worker Become Old." *J. Gerontology*, 8:4 (October) 1953.
16. TUCKMAN, JACOB, and LORGE, IRVING: "'When Aging Begins, and Stereotypes About Aging." *J. Gerontology*, 8:4 (October) 1953.
17. TUCKMAN, JACOB, LORGE, IRVING, STEINHARDT, ROGER W., and ZEMAN, FREDERIC D.: "Somatic and Psychological Complaints of Older People in Institutions and at Home." *Geriatrics*, 8:5 (May) 1953.
18. VINCENT, D. F.: "The Linear Relationship between Age and Score of Adults in Intelligence Tests." *Occupational Psychol.*, 26:243, 1952.
19. WELFORD, A. T.: "Skill and Age." The Nuffield Foundation, Oxford University Press, London, 1950.

# The Modern Corporation and the Nation's Health

—A Symposium—

## The Role of the Medical School in Industrial America

GEORGE PACKER BERRY, M.D.
Dean of the Faculty of Medicine and Professor of Bacteriology
Harvard Medical School

### Trends in Medical Education

1. THE APPRENTICESHIP ERA: To formulate an adequate picture of medical education today, it is necessary to retravel the educational road since the closing decades of the 19th century. I shall not burden you with a detailed historical account, nor shall I expose you to a dry recital of dollar deficits or how they came to be. But I do want to emphasize for you—many of you know this already and better than I do—that in 50 years, the profoundly changing pattern of American life—in industry, in communication, in social consciousness, and in practically every area of our culture—has thrown new and challenging opportunities before our medical schools.

I must go one step further; it is these very medical schools that have helped so greatly to accelerate the changing patterns in our lives by playing a central role in the creation of the healthiest national community that the world has ever known. I use the word "healthiest" in its present medical sense: I expect to see the day when medicine will have given it a much broader meaning. Meanwhile we are all aware of many unrealized objectives to achieve which we must all work together. The flowering of medicine that we have been a part of, nevertheless, has been one of the most significant of human accomplishments. I predict that in the story of our period—the first half of the 20th century—when the full story is written 100 years or more from now, American medicine will rate a very large chapter indeed in the account of the revolutionary years through which we have lived.

Medicine and industry have grown side-by-side. Both have matured with the times, just as both have influenced these times. Industrial physicians are in an enviable position to appreciate the delicate process of action and inter-action. The industrialization of our nation with its increasing efficiency, expanding markets and rising production could not have occurred without the concomitant growth of medicine. And what does this growth depend on? What lies at the very heart of our nation's health? Our medical schools—for out of them, and out of them alone, have come our physicians of today, will come our physicians of tomorrow.

Fifty years ago no one could have predicted this interlocking role of medicine and industry in reshaping American life. No one could have foreseen the astonishing conquests medicine would make over diseases as old as time and over problems that appeared so baffling their solution seemed to be beyond reach, nor what the implications would be for industry. To bring about these changes, to reap the benefits of hard-won discoveries of the medical school laboratory, sweeping revisions were required in the way medicine was taught.

Before the turn of the century, many of the medical schools were such in name only. They were adhering to an apprentice system that had outlived its usefulness. Classes were too large, graduates often merely tradesmen. It was the European schools, notably the German, that were in the forefront, their higher standards, more rigorous scientific discipline stemming from the towering strength of their parent universities.

In 1904, in the United States, 160 medical schools were training a student population of 26,000; today, 50 years later, 80 medical schools have a student population that has only recently exceeded the 1904 figure. Thus it required about two generations to eliminate the inferior schools and to build the facilities needed to achieve—this time at a high level—an excellent educational opportunity for the previous number of medical students. You know what a gigantic un-

These presentations by DR. BERRY, DR. PAGE, and MR. KESTNBAUM (pages 213 to 223) are from the Panel Discussion on "The Modern Corporation and the Nation's Health," sponsored by the Medical Advisory Committee to Industry of the National Fund for Medical Education, and comprising the Tuesday evening session, the Industrial Health Conference, April 27, 1954 in Chicago.

dertaking this has been. You know too how greatly it was accelerated by the appearance of the Flexner Report in 1910, which served to crystallize the thinking of physicians about the mediocrity of medical education and awakened a public interest that helped physicians to eliminate the deficient schools. *Minerva Medica* moved to America. Today, the medical schools are seeking your support to keep her well nourished.

2. THE SCIENTIFIC ERA: Following the turn of the century, the scientific era in American medicine began to flourish, an era that has led to specialization with all its benefits and difficulties, an era, also, of increasing complexity, and accordingly of unprecedented cost for medical education. I do not need to remind those with your industrial acumen that the continued improvement of a good product costs money, that a poor product is not cheap, a poor product is valueless, especially when the poor product is a physician.

In this 50-year period, the impact of physics, chemistry, biology, and the other basic sciences has been felt more and more in the medical schools. Scientific principles have become the cornerstone of medical teaching. Today's medical graduates are not physicists, or chemists, or biologists, but they have gained an insight into the principles of these disciplines and are well equipped with the essential working facts. They know how to apply these principles and to manipulate these facts, using both as tools in the medical setting.

The cost has run into many millions of dollars. The medical schools were able to pay their bills as long as endowments continued to grow along with expenses and the dollar retained its purchasing value. But the depression came, and World War II, and in its wake the soaring cost of living, precipitating the medical schools into their present insolvency. They had a difficult decision to make: to retrench through cutting the quality of their product, or to dig into precious capital. But a medical school cannot retrench—neither the profession, nor industry, nor the public at large will stand for it, for it is not in the national interest. The result has therefore been one of the most severe budgetary crises in history. Only by tolerating dangerously low salaries for teachers, by foregoing badly needed repairs and improvements, by abandoning long-overdue expansion—all at the very time when the call for the services of doctors is more and more strident—have the medical schools kept going.

All this has been undermining our medical educational system, which requires full-time teachers in adequate numbers. We are in the position now of trying on the one hand to maintain the kind of educational programs that our society, including industry, is insisting upon, while on the other hand, we struggle with budgets that simply will not support our programs. Endowment income has not kept pace with expenses; teaching staffs are shockingly underpaid. Little wonder that there are many unfilled teaching posts in our schools.

This is a very unhealthy situation; one that threatens to topple the structure of a health program that has been painstakingly erected for 50 years. Unless financial stability can be recaptured for our medical schools, and promptly too, the nation stands to lose far more than it is pleasant to contemplate.

3. THE TRANSITION TO COMPREHENSIVE MEDICINE: There are other important ingredients of the changing structure of medical education. Some far-sighted teachers are coming to realize that we are not as broadly scientific in the teaching of medicine as we have thought that we are. Scientific medicine means the scientific evaluation of the patient in his ecological setting: physiological, psychological, sociological. It means understanding the stresses and strains that form the constant, drumming background of his health and disease. The term for this today is "comprehensive medicine." It is no less scientific than what has until recently been designated "scientific medicine"—it is simply scientific medicine embracing as it should a greater territory. This concept enables the physician to understand the patient more profoundly and what keeps him well or what makes him sick.

In this connection I think that Dr. Earl C. Bonnett, the Medical Director of the Metropolitan Life Insurance Company, has made some shrewd observations.[1] He states:

"The biggest job . . . . that the doctor in industry has is the management of emotional problems and reactions of the average employee. The doctor must come to recognize this employee as a complete individual with a home, family and financial worries as well as problems related to other employees and supervisors. This does not, I think, call for a trained psychiatrist, but rather for a doctor who has been taught something of psychological and emotional reactions, and who can recognize the interplay of stresses on these reactions and thus help the individual to an understanding and to an insight into his behavior. For this purpose, I would select a doctor with personality and understanding, one who can sit down with the individual in a friendly, firm but sympathetic way, to recognize the true situation. Unfortunately, there are not too many of these doctors at the moment, and those available seem to have this capacity by endowment rather than by education. Except among the safety and sanitary engineers and the chemists and toxicologists, we have no great need for the pure scientist, who will carefully balance the *pros* and *cons* in order to make an exact diagnosis, whether of a physical disorder, an intoxication or a mental impairment."

I am sure that Dr. Bonnett shares with the rest of us a high appreciation for the contribution of the scientific physician. He is emphasizing the need for greater breadth, as I have been doing. He continues: "We need doctors who are aware of the relations of emotions to symptoms, as well as the nature and weight of suggestability in groups working in close association."

I believe that it is possible, by giving medical students a better chance than most of them now get to work with patients in their own settings, to help them to appreciate the significance of environmental factors. I believe that we can help future doctors sharpen their intuition in these important areas. Such doctors will be just as scientific as their predecessors; indeed, they will be more scientific, for they will be actively exploring areas all too long neglected.

Medical education has entered a transition period. An attempt is being made of course to continue the gains of scientific medicine, while simultaneously adding greater scope—comprehensive medicine. To strike more directly at the root of illness and disability in our society, the goal must be one of prevention—not bringing the patient to the doctor's office, but keeping him out. We want to examine healthy "patients" to keep them healthy. Then, we shall be doing our best job. This objective is still a long way off, but we are moving toward it. From nowhere has the stimulus to move forward come more strongly than from the needs of industrial medicine. Indeed, recognition of these needs has been an important factor in propelling medicine into the present period of transition.

## The Modern Medical School

1. ITS GOAL: BROADER PROFESSIONAL COMPETENCY:
To some of us in medical education, it is becoming increasingly apparent that we are caught in a kind of paradox. We recognize the vital importance of the growing mass of scientific facts and hypotheses that any medical student must have familiarity with. We realize, too, that this mass of material often obscures for him the scientific principles he must understand in order to work effectively as a doctor. To resolve this conflict, more efficient ways to illuminate the important principles are being sought. Permitting medical education to deteriorate into vocational training, on the other hand, is a constant danger. Specialists press for the teaching of more factual knowledge in their specialties at the undergraduate medical level. But this is a force that could lead us toward a chaotic, less-well-synthesized type of teaching. Our aim must be precisely the opposite—to teach the principles of medicine.

Training for the specialties, as we speak of them here, is essentially a post-graduate problem. Although the specialties have been the indispensable means for achieving great gains for the patient, the accent for the undergraduate medical student must be far broader. He needs grounding in the fundamentals of medicine. For real professional competency, our graduates must be capable of facing and solving original problems, through manipulating medical principles rather than drawing on bits of specialized knowledge. Later, as they plot the course of their professional lives, they will be enabled to do so from a sound scientific base. If they decide to specialize, their specialty training will rest on pathologic physiology. It is for this reason that our medical schools are coming more and more to stress the interrelationships among the several medical sciences, each such science contributing principles that the physician can use, each sharing common ground with the others. By pathologic physiology, I mean the mechanisms of the derangements of normal physiology. The effort is to teach in such a way that the principles can be applicable in the wide variety of medical situations that follow no simple textbook description, but nevertheless follow a biological line that betrays a pattern of some constancy and significance.

In brief, the aim is to teach the comprehensive nature of medicine itself, to equip the future physician to develop in whatever way he finds most stimulating.

2. THE EXPERIMENTAL APPROACH TO THE IMPROVEMENT OF TEACHING:
To design more efficiently the kind of educational opportunity likely to lead to the highest possible professional competence, some medical schools are actively experimenting with the objective of improving the entire educational program. These experiments concern not only the curriculum, but also the optimal use of time, facilities and personnel. Each of our few educational dollars must buy the most it can buy!

One of the most exciting aspects of medical education today is the willingness of medical schools to undertake educational experiments. We hope that they will guide us soon to more rational readjustments of our teaching programs. I wish that I had time to discuss these experiments with you, for I know that you would be intrigued and greatly encouraged. I must be content to refer you to a report[2] on some of them and on other transitional forces in medical education, which you will find in the *Journal of Medical Education* for March, 1953, now available as a reprint through the National Fund for Medical Education.

Some of you have been studying these educational experiments. You who have will agree, I think, that the medical schools, although sorely beset by financial problems, are struggling to meet the challenge of the hour with vigor and determination. The emphasis in these experiments is on a better understanding of the role of the medical schools in serving the nation. An increasing effort from coast to coast is being made to come to grips with the difficult problem of teaching undergraduate medical students in the laboratory, the clinic, the home—all with the single objective of finding more efficient ways to insure the broad professional competence that will produce the kind of a doctor our society is demanding.

3. THE NEED:
To answer these questions about medical education, questions that need answering immediately, new and substantial financial support is required.

This support can no longer be secured from the

present endowments of the schools—endowments must be greatly augmented—or from the grants that most schools are receiving annually for special investigations. We must have new resources simply to keep going, but it is not enough simply to keep going. Everyone agrees on that. We must have new resources if we are to find out, through experimentation, how to produce the better kind of physicians for tomorrow that we have been thinking about and planning for. This is the very crux of the matter. If teachers are to attain their objectives through better teaching, they must learn how to do so by experiment. They must devise new procedures and put these procedures to the test in order to retain what is found to be constructive and abandon what is not. This involves setting up many kinds of experiments in teaching. Such experiments are expensive. Without new support for this venture—venture capital, so to speak—the medical schools cannot meet the future needs of society, let alone play a significant role in finding new answers to present needs. I shall not belabor the significance of this point for an audience so uniquely competent to understand both the medical and industrial significance of this entire situation.

## The Medical School and Industry

1. INDUSTRIAL HEALTH AND ITS IMPLICATIONS:
Next, and finally, I want to talk about industrial health and its many implications, but I think you will all agree with me that this is just what I have already been doing. When speaking about the health of the nation, we are speaking about industrial health, because industrial health is not a special kind of health, any more than industrial medicine is a special kind of medicine. It is good medicine; no more, no less. The good industrial physician is good because he is a good physician.

The more competent the industrial physician is, the sounder will be the industrial health programs that he can design and direct. You know far better than I what real gains have come from your health programs in terms of a happier industrial community, which is what all are striving for. The gains that have been made against occupational disease, accident frequency, absenteeism, etc., are all gains that employer and employee share together. These gains are felt not merely at the local level in the plant, they are felt also at the national level in terms of a more productive society. The result is a better adjusted community of workers.

2. THE MEDICAL SCHOOLS AND THEIR CONTRIBUTIONS:
The medical school, particularly the private medical school, is hard hit in times of inflation such as ours. Many a university president thinks of his medical school as a voracious parasite on the educational enterprise. (I might argue against the word "voracious"—I cannot argue that we are not starved!) He believes that his medical school is today draining away from his parent university a huge amount of money seemingly far out of proportion to the number of students being taught.

A doctor cannot be produced for the same amount of money as an engineer, a lawyer, a clergyman, or a businessman. This is inherent in the nature of medical education. We who have been through a medical school know why. We know what an enormous organization must support the medical curriculum, how many hours of work are required of students and teachers, for laboratory assignments and for clinical instruction. No one has ever devised a simple way to get the student, the teacher, the test tube and—most important of all—the patient together in the right place at the right time with complete predictability! And no one ever will.

Medical teaching is not pat; it is not easily regimented. But we are striving to make our teaching as efficient as possible, but we cannot keep it good, let alone make it more productive, and expect the costs to decrease.

The private school could once meet its responsibility, almost totally, through the devices of tuition and endowment. Endowment income has dropped—long ago it fell below the 50% mark in the budgets of medical schools. Tuition once paid for more than half of the costs of the student's medical education; today it pays but a fifth. We cannot raise tuition sufficiently to meet our deficits without making medical education so expensive for the student that very few could afford it. In so doing, furthermore, we should lose many of our talented students, for talented students come from every economic level in our society.

Where can the medical schools turn? To the government? Many think so. If we are compelled by mounting deficits to turn to governmental subsidy as a last resort, we may find that we shall have to accept certain terms from Congress that we may think are not consonant with the best interests of medical education.

A better approach, I am convinced, is to be found in explaining our problem to the American people. To be effective, we must show them what our contributions have been, what is expected of us, what the nation's stake in medical education is, and what we are prepared to do with adequate funds. Once it understands the issue, the public will not let us down. This is one of the reasons why I place such high hopes in the National Fund for Medical Education and the Medical Education Foundation of the American Medical Association. They are instruments by which we can make our predicament known to the public and to the doctors who are part of it.

By mobilizing new sources of private financial support, we shall be in a stronger position to resist governmental control should the time come when financial exigencies make it desirable to accept governmental subsidy.

3. INDUSTRY'S STAKE:
I could give you an elaborate speech about the stake of industry in medical education, but any of you could doubtless give me a better one!

We understand each other on this point. The deterioration that would ensue in the national economy were even a few of our medical schools to shut down is incalculable. Don't think me so naive as to imply that any will shut down—the community would not permit it. Yet in recent years, three private schools have had to become state-supported institutions. Accepting the thesis that private schools play an important role, this is an ominous sign. Let us hope that it is not a trend! Such a trend would chip away at the foundations of private enterprise in education, which I submit has made, and can continue to make, if the required support be forthcoming, an expanding contribution to national well being. To the extent that all medical schools are handicapped financially in fulfilling their obligations, to that extent industry—and in the end this means all of us—will suffer grievously.

So I say to industry: medical schools need your assistance and they need it now. Think of the unique contribution that medicine has made to American industry, and about the prospects for the future. Will this not stimulate your active support of the medical schools? We ask you to help us find the resources that will make possible improvements in medicine during the second half of the century on a scale even greater than during the first half. Imagine yourself, in 1900, looking ahead to 1954. Could you, or could anyone, have predicted the changes in medicine that we have seen? The wisest among us could not have done so. At mid-century, looking ahead to the year 2000, can any of us anticipate the developments to come? No! Clearly, we cannot. But one thing that our predecessors were wise enough to do, we can do also. Like them, we can mobilize our creative powers to build stronger medical schools and thus guarantee the optimal educational environment for the growth of medicine. Then, even though we cannot see exactly what directions this growth will take, we can be confident that the growth will be vigorous and productive. If we can succeed now in nourishing medical education, then medicine will take care of itself.

## References


1. Bonnett, Earl C., M.D., Medical Director, Metropolitan Life Insurance Company: From an unpublished talk, "The Role of Environmental Medicine in Industry," delivered at a Special Meeting of Medical School Deans and Industrial Medical Directors at the University Club, New York City, July 20, 1953, under the sponsorship of the National Fund for Medical Education.

2. Berry, George P., M.D., Dean, Harvard Medical School: "Medical Education in Transition." *J. Med. Education*, 28:3, 17 (March) 1953.


# Medicine in Industry


ROBERT COLLIER PAGE, M.D.
Associate Clinical Professor of Industrial Medicine
New York University Postgraduate Medical School
and Co-Chairman, Medical Advisory Committee to Industry
National Fund for Medical Education


When we say the phrase "a modern corporation," a host of images comes immediately to mind. We think of huge industrial plants sprawling across acre after acre, the sky overhead silhouetted by cloud-streaming smokestacks. We think of assembly lines with finished products rolling off at half-second intervals—of row on row of whirring machines with a few highly trained technicians—of thousands of automobiles in the parking lots outside the plant—of million dollar payrolls—of the floating of bond issues, and of production quotas unbelievable 20 years ago.

All these concepts and many others are webbed to our image of the great American phenomenon—the modern corporation. The concept of the modern corporation is rooted in its hugeness, the astronomical figures associated with every aspect of it. Perhaps that is why, all too often, we tend to forget the individual employee, who obviously enough, is the backbone of the vast enterprise.

When I say the individual employee, I am not talking about personnel problems in the usual sense. I refer to the existence of the individual in the sense of a separate, independent human being. Jonathan Edwards, the American theologian, summed up this concept of the human being in his treatise, "The Freedom of the Will." Though it was published in 1754—200 years ago—these words can be studied with profit by the leaders of today's modern corporations:

"Man is entirely, perfectly and unspeakably different from a mere machine in that he has reason and understanding and has the faculty of will, and so is capable of volition and choice—he has liberty to act according to his choice and do what he pleases, and by means of these things is capable of moral habits and moral acts—such inclinations and actions are worthy of praise, esteem, love and reward; or, on the contrary, disesteem, indignation, and punishment. In all these things, man is different from mere machines."

The hard fact is that in all too many American corporations, management may be aware that man is different from mere machines—but, for some inexplicable reasons, devotes more concern to the machines than to the man. It is not uncommon to find an executive who worries more about tire replacements on his fleet of trucks than the health of his employees—until he notices the absentee rate going up. Then, he swings into action in an effort to cut down absenteeism. Sure enough, the rate may subside temporarily, but before too long, employee health problems will start mounting up again.

The modern corporation must pay more attention to the man; it is as simple as that. The late John D. Rockefeller once remarked:

"Perhaps it is worthwhile to emphasize again the fact that it is not merely capital and 'plants' and other material things which make up a business but the character of the men behind these things, their personalities and their abilities; these are the essentials to be reckoned with."

In our present-day modernized world, mechanization has meant replacement of human power with mechanical power humanly controlled.[1] The advent of automation will tend to lessen, or even eliminate, this human control—or at least put it into fewer and fewer highly technical hands. Management is presently operating intricate mechanical organizations, using a handful of key people. Training costs are high, for the relatively few people must be very proficient.

And what of the future? It seems clear the trend toward highly skilled personnel working with elaborate mechanical and electronic devices will be accelerated.[2] This will force corporation personnel work to be done on an individual basis rather than a group one. Employees will be more highly trained and educated; the services of each one will be, in effect, "worth more" to the company.

As a result of this, the medical aspects of human relations and executive development are becoming a paramount concern. In just a matter of time, the human elements of business will parallel its financial requirements. A constructive health maintenance program for all employed persons will be periodically evaluated by top management, simultaneous with annual or biennial reviews of their financial status.

Modern industry is by no means moving into a strange uncharted area when it sets up a constructive health maintenance program. For health maintenance is, first of all, awareness of health rather than the negative practice of awareness of the outbreak of disease. For centuries, the wise men of every era have had startlingly advanced ideas on health maintenance—ideas which today, in rephrased form, excite all sorts of publicity as "new" or "epoch-making."

"A healthy body is a guest chamber for the soul," Francis Bacon said in the early seventeenth century. "The sick body is a prison."

What we want to do, in Bacon's terms, is let the soul flourish amid a healthy body and strong nervous system—that is the practical purpose the modern corporation aims to achieve with every employee.

Medical advances, then, have by no means been restricted to recent times; industry can call on a wealth of background in preparing its constructive health maintenance programs. Medical science, ancient or modern, is industry's ally. There should be no need to say this; it should be obvious. But it is astonishing how medical science is taken for granted, while other sciences, which have merely made the world a more comfortable place in which to live, are extolled. The engineer, chemist and physicist may take proper pride in the fact that their discoveries and inventions have enormously increased the production of convenience, wealth and power. Could—and would—all these advances have been possible without comparative advances in medical sciences and knowledge having to do with the physiology of man?

Nearly everyone realizes the advances accruing from the telephone, the automobile, television and the airplane. Few, however, appreciate in equal degree the unquestionably greater dependence civilization has placed upon the services of the medical sciences. It has been said that the former contribution is positive, the latter negative. The logic of such a statement can be questioned.

Within the lifetime of men still living, here are only a few of the positive benefits given to mankind by the medical sciences: anesthesia, which makes surgical operations painless, is one of the most humane discoveries of all time; the hazards of childbirth are under control; the bacterial cause of disease has been established; by the practical application of known scientific principles, constructive medicine, industrial hygiene, and sanitary engineering are now part of modern civilization. When these principles are developed to their fullest extent, not only should there be complete reduction of all infectious disease but human life may well be prolonged in a yet unknown state of peace, happiness, and contentment.

With the march of medical science, the concepts of the essential nature of health and disease have changed.[3] Hormones, enzymes, electrolytes, and other chemicals of the body are now being examined with the interest formerly reserved for anatomy, physical diagnosis, and microscopy.

The causes of disease are now more generally understood by the public at large. Furthermore, it is becoming clear that disease is not limited to an anatomical part, an organ, a tissue or a system—it affects the entire organism. A disease or symptom complex, from all objective complaints, may be limited morphologically to a tissue. But actually it may affect not only the normal function of the entire organism but also set into motion a subtle progression of reverberations—psychologic, sociologic, and economic—extending far beyond the sick patient. We are constantly reminded that a human being lives in equilibrium with his environment, and that in some degree he affects and is affected by all the conditions that surround him.

It is reasonable to assume that in the not too distant future, all problems of a medical nature having to do with the employed person will be interpreted in these terms: *how this condition affects or is affected by the employee's actual working environment.*

This is a far cry from considering personnel medical problems exclusively in the light of absentee records. It is a forward-looking, all-inclusive policy which has its roots in the periodic health inventory.

THE periodic health inventory of individual employees is a "must" for a modern corporation's constructive health maintenance program. The program actually begins with the preplacement examination which goes beyond the usual so-called "pre-employment" examination. Far more details are sought here; the new employee is considered in relation to the job he has to do, with the physical examination *per se* taking its rightful place in the medical analysis of the total individual.

The next step is the performance of a comprehensive periodic inventory at suitable intervals determined by the examining physician. Such an inventory will include the sociological history of the individual, all emotional factors, his reaction to stress and strain, the character of his home life and extracurricular activities; all of which, when coupled with the actual physical findings, give the examining physician the facts necessary to consider the employee from a *total environment* point of view. This is the 1954 way of saying what the general practitioner of the 1920's knew when he "saw all, heard everything" but said nothing to his patient.

Once a constructive health maintenance program is started and periodic health inventories of all employees are made, we can carry our environmental approach one step further. All employees, from a strictly medical point of view, may be placed in one of the following seven categories:

0—Normal health.
1—Situational (no existing pathology) state.
2—Functional (existing pathology) disease.
3—Neuropsychiatric state.
4—Cardiovascular disease.
5—Neoplastic disease.
6—Metabolic disorders.
7—All other medical problems.

The properly managed constructive health maintenance program assumes that if the patient in industry is still capable of doing an efficient job, he or she is normal until proved otherwise.

This normalcy may well exist even in the presence of such so-called abnormalities as heart disease, arthritis, kidney or liver disease, hypertension, or arteriosclerosis. All of these are, in a high percent of cases, physiological changes which can be anticipated as normal age progresses. In other words, these diseases may be considered the inevitable rewards to which man falls heir as he follows the natural course of aging. The important point is for the man to learn his limitations and how to live a full live within them.

A wise man once put it in more picturesque fashion: "He who fills up every hour of his life with activities within his abilities to perform," he said, "will insensibly glide into old age without perceiving its arrival, and his powers, instead of being suddenly and prematurely extinguished, will gradually decline by the gentle and natural effect of accumulating years." These are the words of Cicero, in an article entitled "On Old Age" and written 106 years before Christ. They are true now, as then.

It is immediately apparent that this approach to the patient—the assuming of normalcy—is diametrically opposed to the way I was taught in medical school, and to the philosophy to which the student of yesterday and the average doctor of today was exposed throughout his professional training period. I was taught to consider each patient as having some type of disease until proved otherwise. In other words, each patient, because he was a patient, and had come to the doctor, was abnormal.

No longer, as Dr. Berry[4] has so clearly pointed out, do we take this negative attitude. Without question, the new positive approach is most practical when applied to industry. Eventually it may be applied to medicine in general—and we will then be in a true "era of normalcy."

Before the situational state can be clearly understood, a few words defining this concept are in order. Both World War II and the Korean War offered evidence that every man has his emotional "end point" as well as his physical one. Owing to many factors—among which could be listed improper job placement, unhappy home or working environment, and lack of intelligent observation by a responsible supervisory staff—many individuals in industry are approaching an emotional end point. If this is once reached, it will result in their becoming the unemployables of industry.

Situational state, therefore, is the name being given to the vague group of complaints affecting individuals whose end point is being reached after varying periods of exposure to circumstances beyond their control and against which they are powerless to act.

The situational state, together with its more advanced form—the functional disease, may be detected early, providing the local superintendent, foreman, or superior is alert to the situation. It can be detected early for the simple reason that the employee's work efficiency begins to suffer as his end point is approached. Therefore, theoretically, most employees in this category can be handled successfully by other than medical personnel with this proviso: that they are trained in *human welfare* and *understanding*. For it is an accepted fact that functional illnesses, or so-called psychosomatic complaints, have their origins in non-medical sites, and generally speaking, occur in the 18 to 36 year old age group.

The more severe situational state and the functional disorders should, of course, be referred to the doctor in industry. He is the most capable agent to diagnose and suggest remedies—usually by changing the individual's environment.

An employee suffering from a severe situational state could very easily progress, if not under competent observation and treatment, to the status of a person having a real functional illness showing definite organic change. The most common example in industry, perhaps the elite of all the functional illnesses, is the duodenal ulcer. The ulcer has been called the "wound stripe of civilization." It would be better, perhaps, to call it the service badge of competition, for it is in the highly competitive industry of today that the

natural progression from situational to functional disease, followed by ulcer formation, is most common.

The situational state, if unchecked in its early stages, can also progress normally toward our fourth category—that of the neuropsychiatric condition. These patients often slide rapidly toward full-blown neuroses, manifested by anxiety states, severe depressions with their suicidal tendencies or conditions of complete withdrawal, bordering on the psychotic.

A COMMON evil which lies in a sort of limbo or "never-never land" between the situational state and the actual neuropsychiatric disease is alcoholism. The problem drinker[5,6] too often has the roots of his illness in a combination of situational difficulties plus emotional factors which, if detected early enough, would have prevented the development of the sodden half-man who haunts the offices of personnel directors and physicians in industry. We like to think of our concepts of problem drinking as a disease and the consideration of the factors which lead a man to become an alcoholic, as being new—but listen to these words:

"Twelve years ago I was possessed of a healthy frame of mind and body. I scarcely knew what it was to ail anything. Now, except when I am losing myself in a sea of drink, I am never free from those uneasy sensations in head and stomach which are so much worse to bear than any definite aches and pains."

These words were written by Charles Lamb in his "Confessions of a Drunkard" in the year 1822.

In the remaining classifications—cardiovascular, neoplastic, metabolic, and others—the physician in industry will often be the one to make the diagnosis. Once this has been done, he refers the patient to physicians outside the company for definite therapy. He remains in the picture only as the member of the team who made the diagnosis. Of course, he continues to act as liaison man between the patient, his private physician, and the company.

All disease, whether it be neuropsychiatric, cardiovascular, neoplastic, metabolic or other, is more easily curable if it is detected early. Early detection is the watchword of the physician in industry. It is only by early detection, followed by correct *supervised* therapy that the employee will be returned to that classification into which all employees fall in an ideal industrial medical set-up, namely, "normal health and adjustment."

THE MODERN corporation, if guided by competent medical service, is on solid ground as far as public opinion of its attitude towards its employees is concerned. The employee, in turn, profits by such managerial interest in his behalf. He feels better, has more zest, and performs his duties in a manner which is beneficial to him and to his family as well as to his employer. Assignments with such progressive companies are a challenge to the qualified physician. He is in a position to do so much for so many.

To maintain health[7] "requires the ingenuity of many, the application of the accepted knowledge of the few, and the appreciation of its worth to employer and employee alike." Unfortunately, most employers still think of health in its negative sense—in terms of drugs and hospitals, pain and worry, sickness and death. Yet they should be thinking of health in terms of mental and physical vigor and the ability of an individual to enjoy a useful and productive life with his fellow associates. Those enlightened realize the importance of this positive approach to the question of health. They measure the health of an industrial worker with statistics on housing, nutrition, production, and employment rather than with statistics on absenteeism, accident incidence, morbidity, and mortality.

The tools of constructive medicine[8] are many. Knowledge of normal human physiology and the physiological aspects of disease is one basis for improving health—but only *one* basis. For there are others: better nutrition, guidance as regards selection of occupation, the avoidance of prolonged and excessive fatigue, proper balance between work and play, selection of appropriate physical exercise, and general habits compatible with individual physical and mental well-being.

Such a program requires a complete understanding of purpose between the patient (when he is well and when he is ill), the employer, and his physician. Teamwork within the medical profession is the next prerequisite. The physician in industry, the general practitioner and the consultant must consider the entire problem in terms of the patient if we wish to justify the ideals of our profession.

Industry's growing interest in the field of human relations affords the competent physician an opportunity to practice medicine in its broadest sense. He acts as a medical consultant to the worker, to the employer, and to the private physician. He renders an unbiased and effective service to all.

Thanks to industry, the average employee is now getting better medical care than he ever got before. Because he is healthier, he is a better producer. In turn, industry is able to provide more effective medical care in steadily increasing quality. Here, then, is a reward which both labor and management are enjoying together!

## References


1. Tomorrow's Management. *Business Week* (August 15) 1953.
2. DRUCKER, P. F.: Management in 1980. *Business Week* (September 12) 1953.
3. The American Foundation of Occupational Health (Occupational Health Institute), 28 East Jackson Blvd., Chicago, Illinois: Trustees Report of Present Status (May) 1953.
4. BERRY, GEORGE PACKER, M.D.: The Modern Corporation and the Nation's Health—The Role of the Medical School in Industrial America. *Indust. Med. & Surg.*, (May) 1954.
5. PAGE, R. C., and HAWKINS, E. R.: Finding the Problem Drinker. *Quarterly J. Studies on Alcohol*, 14:586-595 (December) 1953.
6. PAGE, R. C.: Alcoholism and Industrial Health. *Indust. Med. & Surg.* (April) 1954.
7. PAGE, R. C.: The Road Ahead. Industry and Tropical Health. Harvard School of Public Health, pp. 109-117 (December) 1950.
8. STIEGLITZ, E. J.: Management's Stake in Health Construction. *Indust. Med. & Surg.* (May) 1954.

# Modern Corporation and the Nation's Health

—MEYER KESTNBAUM
Chairman, The Committee for Economic Development
and President, Hart Schaffner & Marx

I AM DELIGHTED to participate this evening in this important discussion of the role of the modern corporation in promoting the nation's health.

Dr. Berry has told us with great clarity of the current trend toward comprehensive medicine that is running in our medical schools today, and why he believes that this will mean an oncoming generation of physicians better rounded and better equipped to meet the health challenges of the future.

Dr. Page has, with equal clarity, noted how the modern physician can constructively use this growing concept—comprehensive medicine—to bring health, hope and purpose to the millions of men and women actively engaged in, or connected with, industry.

My assignment is to explore with you the many ways in which business and industry can help to enlarge the areas of application for medicine and help thus to promote better health and living standards for all the American people.

First, I should like to say that management is increasingly aware of the important contribution industrial medicine is making to the health and welfare of the American people. By protecting and promoting the employee's health, the industrial physician has helped materially to advance the nation's living standards to the highest point ever achieved.

Enlightened management today not only sees good health as good business—it also sees the promotion of health as a vital part of its activities. It recognizes the promotion of in-plant medicine and industrial health as part of the broader task of building a healthy environment—physical, mental and social—for the nation as a whole. Such an environment is one of the basic ingredients of a more abundant life.

As yet, however, industry's broader function—promoting health outside the plant—is in an exploratory stage. The formula for fuller participation in community health programs is still being worked out.

It is essential, therefore, that closer liaison be established between industry and medicine. The lines of communication—especially between the industrial physician and management—need to be strengthened. Corporations need help and guidance that their Medical Directors are uniquely qualified to give, both as regards the full application of new medical techniques within the plant and the participation of the companies in the promotion of community health.

One of the most important jobs within the plant, we all agree, is to overcome the serious lag between new developments in medicine and their application to industrial health. In-plant medical programs need to be geared to take full and immediate advantage of all new tools and weapons.

Psychiatry, for example. How many plants are utilizing the benefits of psychiatry in the promotion of employee health? How much more use could be made of the psychiatric tool in sharpening our supervisory skills and in improving our employee relations? Clearly, our task here is to narrow the gap between what we *do* and what we *could do*.

Again, how many companies fully utilize the pre-placement and periodic examinations and the follow-up with the family doctor? How many encourage the Medical Department to use the plant as a demonstration unit for early detection of disease or keep a running health inventory or profile on each employee?

There are many other examples. The opportunities for improvement in in-plant programs are numerous and varied. Most employers recognize the dollar-and-cents value of safety and health programs *within* the plant. But how many are equally aware of the benefits to be derived from the promotion of good health programs *outside* the plant?

The industrial physician now has the opportunity to show American business that good labor relations, good community relations and good health programs—in and out of the plant—go hand in hand. Here, we must rely heavily on the fund of wisdom that the medical profession brings to this problem. The medical schools are keenly aware of this.

I am fortunate in being associated with a company that learned this lesson long ago. Even before World War I, Hart, Shaffner and Marx—under the leadership of Joseph Shaffner, one of the most enlightened businessmen of his generation—had worked out a formula of labor relations which is now a pattern for the men's clothing industry.

Its basic principle was *cooperation between management and labor for the betterment of the conditions of the workers*, limited only by the competitive conditions prevailing in the trade. Our company has held strictly to the principle ever since. We see peaceful labor relations—cooperation between workers and management—as an opportunity, not for the advancement of the interests of one side alone, but for the advancement of the interests of both.

From the company's standpoint, it is true, we see an economic advantage in well-paid, satisfied workers. But that's not all! We also see the overall advantages accruing to business from a nation of well-paid, satisfied workers. This means understanding the worker and *all* his needs. Here the physician can make a great contribution.

The situation with regard to the workers' health is analogous. There is an economic gain

from reduced absenteeism and illness among employees. But there is an even greater gain in the long run from a nation of healthy workers. As Dean Berry has pointed out, we use the word "healthy" today in a medical sense. Tomorrow, he says, it will have a broader social meaning.

AND CERTAINLY TODAY EVERYONE AGREES THAT THE BEST GUARANTEE OF A HEALTHY WORKFORCE IS A HEALTHY POPULATION.

Progressive American business is understanding better the close relationship between industrial medicine and community health. The environment in which a worker lives is as important as the environment in which he works. He is in the plant eight hours a day, but he is "on the town" 16 hours.

So—some of the problems to which industrial medicine might well address itself, it seems to me, are (1) how better to extend the benefits of plant programs into the homes of the workers, and (2) how to work with other groups for the improvement of community health.

No one, I am sure, knows the limitations of in-plant medicine better than the industrial physician. You know that safeguards inside the plant do not protect the worker at home or on the street or at the movies.

David E. Williams, chairman of the board, Girard Trust Corn Exchange Bank of Philadelphia, put it this way recently. He said:

"A company can have the best in-plant medical service in the world, and still have a lot of absenteeism if the town drinking water is unsafe, or if tuberculosis is not checked, or food-handlers are infected, or if venereal disease is not controlled, or if housing is inadequate, or any number of other faults exist."

In other words, there is no fence high enough, or strong enough, to keep disease out of a plant. Now as for the outside causes of illness, we have to broaden the scope of our interests. We have to look far outside the front gate.

The National Association of Manufacturers took official notice of this belief, I think, when its Board of Directors adopted a statement of policy on "Industrial Health and Medical Programs," in December, 1952. It urged employers "to exercise initiative and leadership, and to offer all possible cooperation, to improve community facilities and health services and to make them readily available."

It is also declared that "the benefits of a company's health and medical program go far beyond the walls of its plants and . . . are making an ever-increasing contribution to the betterment of the community's health standards."

Here is certainly definite recognition of the interdependence of plant and community health programs.

What this boils down to, it seems to me, is this: if the partnership between industry and medicine is going to realize its full potentialities—if it is going to meet its opportunities—it has to make itself felt in the community, in the ranks of the medical societies, in the halls of the health department, and in the councils of civic leadership.

The time is past when management and the industrial physician can shrug their shoulders and say housing is none of our business, the schools are none of our business, traffic regulations, fire laws, restaurant inspection, health department budgets, medical care programs, hospital facilities—all are none of our business.

Most important of all, has been the failure to recognize how much a part of *our* business the medical schools are. This is a point that has not been obvious to us. Dean Berry's talk makes this quite clear. It is the fundamental reason for the existence of the National Fund for Medical Education.

Many companies have already broadened their health interests and activities. Some seek to channel health education into the community through their employees. Others make nursing services available to employees' families. Many have health insurance arrangements which cover dependents. Some cooperate with the unions in their welfare counseling services.

These are all steps in the right direction.

I feel, however, that not very many companies accept the corollary activity: that of participating actively in *joint planning and action* for health throughout the community.

True, many probably have hesitated in the past because they did not want to lay themselves open to the charge of "trying to run the town." Or they have been content to let the health officer and the city fathers worry about community health, because "it is not our responsibility."

I contend that the health of the community is very much our responsibility—one that we share with all other segments of the community—and further, we are neglecting important new opportunities of corporate citizenship if we do not use our influence and our facilities in helping to make it better. Corporations have a challenging opportunity to lead in this sphere.

To my mind, an excellent example of plant-community cooperation—from the planning stage on—is the program developed by Dr. William D. Norwood and his associates at the Hanford Works in Richland, Washington. This program, you may recall, was built around the idea that the industrial and community health programs would complement and supplement each other. Actually they were part of one program.

This program was described in the *Journal of the American Medical Association* as "sound health planning, participated in by all elements of the community."

In some communities, the machinery for joint planning and action already exists. More than 1,000 cities and towns, I understand, have a health committee, or a health council, or a health division of the Community Chest, or some other local planning body.

Even where such machinery does not exist, management and the industrial physician can establish close relations with the health officer, with the medical society, the visiting nurses, AFL and CIO welfare services, the voluntary health agencies, the medical schools, the hos-

pitals, and other agencies interested in community health.

These are our natural allies. Working together we can discover and solve health problems that would otherwise remain unsolved, and continue to erode the foundations of the best in-plant programs. Unknown gaps in community health protection—affecting the health of our employees and their families—can by joint inquiry, be exposed and eliminated.

Suppose, for example, that you start to inquire about the water supply. You may find that the official water supply is OK—i.e., the water the town is drinking is safe—but large areas where your employees live still get their water from wells. And these wells may never be inspected.

Take food. You may find that the quality of food imported for the stores and markets is excellent, but the food handlers don't know the first thing about sanitary precautions.

Health department records—the nerve center of disease prevention—may be inadequate because appropriations have been cut down, and the health officer may need some citizen support in seeking to have the cuts restored.

Or suppose the health department is seeking to promote the idea of periodical physical examinations. It may need someone to start the ball rolling. With employee consent, the plant can become a demonstration unit, setting a pattern for the entire community.

And so on. A municipality may have the best housing laws in the state. But if it can't get appropriations for inspectors, the laws might as well not exist.

Once the habit of joint planning is established, it can spread. If it works for health, it should work for other comunity projects as well.

And this is only the beginning. The full realization of preventive medicine is the bright hope for the future. Here the role of the medical school is paramount.

Many people, conscious of industrial medicine's early up-hill struggles, may foresee many discouraging obstacles to the fulfillment of these hopes. But I, for one, think time is on our side. There is a heartening trend in this country toward active lay participation in health programs.

Corporations, as you know, are footing one-third of the nation's 180-million-dollar bill for medical research. One-fourth of their philanthropic contributions—roughly 60 million dollars a year—goes to hospital service and to local health agencies and the medical schools.

In addition, corporations are joining with the medical profession, through the National Fund for Medical Education, to contribute on a national basis increasing amounts to the support of medical education. The 79 medical schools, corporation managers are coming to realize, are the fountainhead for our entire health and medical structure. Without the doctors they train, the research they conduct and the standards of practice and medical care they develop—without the stimulation and enrichment the medical schools provide—the health services of the nation would quickly deteriorate. As Dean Berry has pointed out, the wellspring—the medical school—must be constantly nourished.

Organized labor, also, is showing a growing interest in health in many ways: by incorporating health benefits in union contracts, by sponsoring health centers in various communities, by establishing welfare counseling services and encouraging health insurance.

Thus there is growing recognition throughout the country of the economic and social importance of good health.

Only in a completely healthy society will the arts and sciences be able to achieve their full potential, and man reap the full harvest of his knowledge and skills.

To lay the foundations for such a society is the *joint* responsibility of all of us: the businessman, the worker, the doctor, the teacher, and the political and civic leader. Matters of such vital public importance can no longer be divided up into exclusive areas of interest—each the sole concern or monopoly of a special group.

Here I would like to remark parenthetically that the National Fund for Medical Education is performing an invaluable service, over and above that of mobilizing private financial support for the medical schools. By bringing together the business man, the industrial physician and the medical educator, the National Fund is helping to promote a working relationship between those groups best equipped to translate the triumphs of medical research into direct benefits to the nation.

Communications become increasingly important with the rapid advance of the biological sciences. One of our pressing needs today is a fuller and better utilization of the new tools being forged in the laboratories of our great medical centers.

The solution of that problem may well be America's answer to Karl Marx. We have at our disposal the greatest store of skills and knowledge the world has ever known. Our task is to translate this treasure into steadily mounting living standards.

Industry can play a key role in accomplishing that task. It has already brought the production of goods and services to the highest point in our history. It can be equally successful—through joint planning and action with other groups—in building a social environment conducive to the maximum enjoyment of these products.

By learning to work together to establish a closer link between plant and community health, medicine and industry can help pave the way for similar cooperation on a broader scale. We can help to show that joint action—from the planning stage on—can speed the making of a better society, both at the local and at the national level.

# Human Relations as Applied to the Younger-Age Employee Group (18 to 35)

—A Symposium—

## Management and the Young Employee

LOUIS E. NEWMAN, Manager of Health and Safety Services
General Electric Company, New York City

IT IS EASY for us in management to take the position that youth works for us rather than we for them. But I wonder if this is realistic on our part. I would like to offer the view that management's responsibility to youth is greater than youth's responsibility to management. And that if we accept our full share of our responsibilities, youth in turn will understand and accept its full share. I say this not out of any paternalistic feeling that the youth of today needs to be coddled and protected from the harsh realities of the business world. Rather, I say it realizing that the harsh realities are that American industry —or at least the part of it in which I am engaged—has a vast job to do in the years ahead and that we must encourage the young men and women who are about to join us to do their utmost. If we don't, we will fail to meet the production challenge which faces us. At General Electric, for instance, we figure that within 10 years our gross business will have doubled.

To meet this challenge we must stimulate these young people, on whom we will depend so strongly in the years ahead; and to do this American industry needs to offer—consciously and carefully—not coddling but opportunity, the opportunity to work and grow.

SO OUR first responsibility is to do all that is economically feasible *to provide the opportunity for those who want to work to be able to work.*

This is of special importance to the young employee. We are already doing a better job of this than we get credit for doing. But, much of the cry for security, for the annual wage, for special seniority protection, and for higher unemployment compensation comes from employees feeling that they may lose their jobs through no fault of their own. So it isn't enough that we provide steady jobs. The employees who hold them must understand the relative security of each job. A feeling of insecurity is sometimes a state of mind which is not necessarily related to the true uncertainties of life.

There are areas of industry, however, where jobs are not steady. Often times the reasons are excellent, but sometimes they are not. Whose job is it to provide steady work? Our employees? Their unions? Our customers? Our government? Ourselves?

Each of these groups has a responsibility to help provide steady work. Our employees by their actions can help us hold customers; their unions can help minimize unnecessary work stoppages; our customers can help flatten out cyclical or seasonal buying patterns; our government can provide a framework of law and enforcement to provide a healthy climate for industry and its workers; but all of these groups will look to us in management for such guidance as is within our control.

A feeling of insecurity caused by fear of losing his job can shape a desirable young employee into an undesirable older employee. So, I would put management's first responsibility to its young employees as doing all that is economically feasible to offer them a chance to earn their living. It is worth noting that these young people do not want gifts or handouts, but they do want to get what they think they have earned.

THE SECOND responsibility we have to our young employees is *to offer them the opportunity to work on jobs fitted to their skills, physical qualifications, mental abilities, and interests.*

If we do this—and some companies are doing an outstanding job in this field—we can expect greater productivity from each employee with fewer interruptions to work caused by dissatisfied employees poorly fitted to their jobs. I think, though, that we in management must be objective enough to admit that a better job could be done. For example, there are many employees throughout industry who need glasses but don't

This Symposium—including the presentations by MR. NEWMAN, MISS CANDLAND, and DR. WELLS—was the feature of the Joint Meeting of the INDUSTRIAL MEDICAL ASSOCIATION, the AMERICAN ASSOCIATION OF INDUSTRIAL DENTISTS and the AMERICAN ASSOCIATION OF INDUSTRIAL NURSES, at the Industrial Health Conference, Hotel Sherman, Chicago, Wednesday, April 28, 1954.

know it. There are employees who are not required to take physical examinations even though their health is a prime essential to their job fitness. They hold jobs like crane operators, truck drivers, or food handling, where lack of physical fitness can endanger the well-being, or even the lives, of others. There are employees ideally suited for group contact who are embittered by lonely tasks. And there are their counterparts who can happily and productively work alone but who are a constant source of friction in the groups to which they are assigned.

Whose job is it to discover the misfits? The employee himself sometimes knows that he is miscast in his job. Sometimes he requests and gets a job better suited to him. More often, though, the employee doesn't know his inabilities or his abilities and we don't either. If proper placement is to be made it looks as if we in management must do it.

THE THIRD responsibility we have to our young employees is *to provide them with an opportunity to work in job environments that protect and preserve their physical and mental health.*

This is an area where management alone is usually responsible. The employee has little to say about his job environment. He usually accepts it as a condition of employment. Please understand that I do not intend to say that all jobs must or can be made comfortable. But, I do say that we have a long way to go in developing job environments that will encourage our employees to put forth their best efforts. I do say that we will find it profitable to improve many of the job environments found throughout industry. One example will be of interest. Some months ago I stood in a press room that was poorly lighted. It seems probable that adequate light in that room will more than pay for itself in lessened spoilage, fewer accidents, and greater output. And, of course, employee morale and acceptance of management's leadership is improved by a light work place rather than a dark one.

We have made steady progress in improving lighting, heating, ventilation, and elimination of toxic conditions. But there is much work ahead in other areas, particularly that of industrial noise, and those areas having to do with the mental health of our employees.

THE FOURTH responsibility we have to our young employee is *to provide him with an opportunity to develop himself to his maximum potential.*

Only by doing this can we develop the leaders we will need to take our place in the future. But there is a more prosaic need than that for leaders. It is the need to fill the job of machinist's helper, of lathe operator, of methods man, of each job in succession requiring a little higher skill or training. Whether the opportunity to develop higher skills is internal or external to a company is not so important as that young employees be urged by their management to improve themselves.

The one distinguishing difference between different companies is the people in them. It is not the buildings, or machines, or even the products that make one company excel. Other managements can duplicate these. But the people who make up each company may start much alike as young employees, and then become different people in their later years, depending on the effectiveness of programs to develop them.

COUPLED with the development of young employees must be an opportunity for them to profit from this growth. So, management's fifth responsibility to its young employee is *to do everything practicable to provide opportunities for promotion to those who qualify themselves for greater responsibility and higher earnings.*

Without this opportunity the young employee who has made the effort to improve himself is likely to be embittered. He is far removed from the frontier woodsman who could see his wealth growing at a rate proportional to his efforts. Our young employee today whose skills are not recognized and used is apt to fight the very system of which he is a part.

THIS brings us to the sixth responsibility of management which is *to provide the opportunity for each employee, particularly the younger one, to get sufficient economic education so that he is encouraged to understand and approve our free enterprise system.*

It is probably a fairly safe conclusion that if we in management could provide what our employees want from us we could increase the likelihood of their giving us what we want from them in return. The interesting thing about this is that many of the things they want they are getting but don't know it. And if they don't know the good they are getting they may be just as dissatisfied as if their wants had been disregarded.

So, in considering our obligations to our employees, we have an obligation not only to give them a fair day's pay but be sure they understand that it is fair. Not only to do all that is economically feasible to provide steady jobs, but be sure that each employee understands his relative job security. Not only to provide employees with opportunities for growth and advancement, but be sure they know that such opportunities exist. Simply stated, it is not enough that we be good; we must be known to be good. And for us to be known to be good will require our extending our educational efforts so that they reach beyond our employees to our friends and neighbors in the community. Then they in turn will help our employees to appreciate the fact that we merit their confidence.

FINALLY, management has a responsibility *to offer young employees an opportunity to work under supervisors who not only get out production on time and at a reasonable cost, but who understand the importance of people.*

These supervisors must realize that people don't exist simply to serve industry, but that industries exist to serve people. They will be the key to the kind of employees a company has in

future years. They can help young men and women grow and prosper, or, they can be the cause of loss of ambition and deep resentments.

If we do not accept our responsibilities then we will have to get along with workers doing jobs for which they are not qualified; who misunderstand and fight this free enterprise system of ours; and who will not qualify themselves for future positions of leadership. But if we do accept our responsibilities then we can expect in return a maturing work force of trained people, doing work to which they are adapted and enjoy; who accept and support our free enterprise system; and who ultimately will replace us in the ranks of management and provide even better leadership for those to follow. I think we in Industrial Health and Safety have a special job to do in educating management to the importance of keeping in good running order its human resources. We have done a magnificent job of designing, installing and maintaining the machinery in our industrial America, but I sometimes wonder if we have given enough attention to selecting, placing, training, and maintaining the people who make this mechanized civilization of ours possible. If anyone sees the importance of this, it must be our industrial doctors and nurses who by patient education teach management the importance of maintaining this priceless ingredient.

# Health Conservation in Industry—The Industrial Nurse's Role

LOUISE CANDLAND, R.N., Industrial Nurse Consultant
Employers Mutuals of Wausau, Wisconsin

ONE OF the earliest treatises on medicine in England was called by the romantic title "Rosa Anglica." The author of this book, one John of Gaddeson, received his medical degree in the year 1309. After five years of practice he was sufficiently modest about his accomplishments to say of his book, "As a rose excels all flowers, so doth this volume excel all other treatises of medicine." His prescription for tonsillitis was "the beak of a magpie hung around the neck." Industrial dentists will be glad to know that to ease a toothache it was recommended that the sufferer, "prick a woodlouse with a needle and apply the needle to the raging tooth." For the stone Dr. Gaddeson suggested, "a paste of pounded crickets and beetles." Many of Dr. Gaddeson's colleagues combined the medical profession with law or the clergy, since so many of their patients were likely to be in need of both considering the manner of medical treatment they received.

After 700 years medical science and its younger companion, nursing arts, have expanded life expectancy to the point where the average child of today can expect to consult his lawyer or his religious adviser sometime even as late as his 65th year of life. Physicians and nurses have helped to maintain man's health through his prenatal period, infancy, childhood, and into adult life. However, notwithstanding this remarkable life span, the cost of ill health continues to be a serious matter. Man days lost and the resulting economic losses both to the individual worker and to industry are computed in the billions of dollars.

THIS meeting was planned to discuss health conservation in industry. Its purpose should be to find out why the losses from ill health occur and what we can do about them. We who attend these conferences are confident that those industries which we personally represent are striving to conserve the health of their employees. They are doing their utmost to provide every health service possible. But what of the many industries which send no representatives but which nevertheless employ a large percentage of the working population? We ought to find out why our message does not reach these industries and why all industrial medical units are not as efficient as they might be.

Obviously, everyone in industry has some part in this process of detection and correction. Broad health policies are possible when accurate information is made available and is interpreted.

The industrial nurse brings three significant basic skills to her job: (1) ability to assemble and report health facts; (2) her powers of observation; and (3) her ability to teach good health practices. The first of these skills is best illustrated by examining an average nurses' work load.

This chart is part of the annual statistical report of a nurse who is employed in a lithographing plant. There are 700 to 800 employees; about 60% men and 40% women. There is an on-call physician with whom the nurse has an excellent

MONTHLY FIRST AID RECORD—XYZ COMPANY

| Industrial Cases | 1952 | 1953 |
|---|---|---|
| Abrasions | 22 | 17 |
| Blisters | 3 | 0 |
| Burns | 0 | 1 |
| Contusions | 4 | 41 |
| Dermatitis | 8 | 3 |
| Foreign bodies | 11 | 7 |
| Fractures | 0 | 0 |
| Infections | 3 | 6 |
| Lacerations | 192 | 161 |
| Punctured wounds | 8 | 2 |
| Slivers | 57 | 52 |
| Strains and sprains | 26 | 18 |
| Return calls | 96 | 112 |
| Doctor cases | 42 | 59 |
| Total Number Industrial Cases | 503 | 492 |
| **Non-Industrial Cases** | **1952** | **1953** |
| First aid only | 81 | 85 |
| Personal visits | 980 | 776 |
| Cases referred to family doctor | 150 | 151 |
| Cases referred to dentist | 0 | 1 |
| Home calls | 1 | 1 |
| Total Number Non-Industrial Cases | 1261 | 1021 |
| Grand Total of First Aid Cases | 1719 | 1513 |

relationship, but this physician assumes no responsibility for the health problems of the plant. There are no pre-employment physical examinations given. Therefore, the nurse must depend on information she is able to gather at the time she first meets the new employee and upon what information she is able to glean at subsequent visits.

You will observe that the non-industrial visits are almost two and a half times as frequent as the industrial. You will also observe the number of cases this nurse referred to the family physician.

The second chart shows the total number of employees who reported ill as compared with the total number of compensable cases:

ABSENTEE REPORT—XYZ COMPANY

| | | 1952 | 1953 |
|---|---|---|---|
| Number Reported Ill: | Plant | 437 | 528 |
| | Office | 447 | 426 |
| Total | | 884 | 933 |
| Number Compensable Cases: | Plant | 69 | 57 |
| | Office | 24 | 30 |
| Total | | 93 | 87 |
| Total Days Lost: | Plant | 3825 | 3445 |
| | Office | 1472 | 4744 |
| | | 5297 | 4744 |

This nurse works under two very important handicaps so far as any health conservation work is concerned. She has no direct medical supervision and there are no pre-placement physical examinations. Yet these portions of her annual report would indicate that she has been able to establish an active health counseling service to the employees of her plant. An analysis of these figures by an industrial physician or nurse would show that she has established rapport with her employee group, that she does take time to discuss health problems, and that in a reasonable number of cases she obtained a positive result.

In spite of these careful and accurate data, this management was not alert enough to sense the fact that their losses are heavier than necessary. As a matter of fact, the temporary disability insurance and hospitalization and surgical benefit insurance losses in this plant are far higher than the workmen's compensation losses.

Another important part of the industrial nurse's collection and recording of facts is the employees' health record. Such a record even in the absence of any physical findings should give an accurate profile of that employee's problems. The next chart is part of the health record of one young woman.

The nurse who made this record does have the benefit of a part-time physician (one hour per week, compensation cases only) and pre-placement physical examinations (done at the physician's office). However, this condition was not discovered at the time of the examination, but the nurse's notes culled from the worker's complete health history gives an almost classic profile of the development of a gastric ulcer, including the emotional and behavior problems usually encountered.

ABC COMPANY
MACHINE DIVISION
INDIVIDUAL HEALTH RECORD

Name: Jennie T. Dept. Finishing Number 454

Age: 31 Phys. Dr. T. Lane

| Date | Illness | Reported | Treatment |
|---|---|---|---|
| 9/1/52 | Out two days—states upset stomach from eating fried foods which doctor advised against | 9/3/52 | Discussed diet. Patient says husband likes fried and spiced foods. |
| 10/27/52 | Upset stomach | 10/27/52 | Rhubarb and soda. |
| 11/1/52 | Upset stomach | 11/1/52 | Rhubarb and soda. Again discussed diet. |
| 1/3/53 | Upset stomach | 1/14/53 | Says she cannot do work (tube catching) because of her stomach. Urged to see her own physician again. |
| 1/26/53 | Upset stomach | 1/27/53 | Called Dr. L for diagnosis—"Emotional intestinal instability" causing gastric disturbances. |
| 1/28/53 | Upset stomach | 1/28/53 | Consulted foreman reference above. Worker does well but seems worried most of the time. |
| 3/1/53 | Severe cold | 3/3/53 | Absent one week |
| 4/1/53 | Nausea and vomiting (after lunch) | 4/1/53 | Had long conference. Patient says she has had stomach trouble for four years. Worse since marriage. Lost 12 lbs. Present wt. 97½, urged to complete physical examination by own Doctor. Patient seems to be afraid to discuss condition with husband. |
| 4/15/53 | Nausea and vomiting (after lunch) | 4/15/53 | Admitted to Fairmount Hospital this day for x-ray and GI series. |
| 4/17/53 | Nausea and vomiting (after lunch) | 4/17/53 | Diagnosis "duodenal ulcer." Disability starts this day. |

ACCURATE reporting is, of course, partly dependent on good observation. This is a skill which has made nurses the valuable assets they are. The fate of a seriously ill patient in the hospital often depends on the nurse's ability to observe the smallest changes in his condition. While this skill may not seem important in dealing with so-called well people it is still a means of judging the general health of the plant population. The worker who is a daily visitor to the Medical Department and the one who has to be urged to report are both counter to the normal pattern and therefore bear watching. The daily visitor is the more obvious, but the shy backward type who prefers to treat his own ills and keep his own counsel may be the one who should be sought out. A recent newcomer to industrial nursing told me this story. She had been employed at the plant for about six months; during that time she had seen almost all the employees; most of them had dropped in to her office out of curiosity if nothing else. One of the few workers she had not seen was this 30 year old man who had an excellent

absentee and accident record. His only two absences during 10 years in the plant had been for a pain in the knee. On this occasion he had bumped his knee against a machine. He was accompanied to the Medical Department against his will by his foreman and shop steward.

The worker tried to minimize the injury and told the nurse that he was reporting under duress. The nurse could find no objective symptoms of serious injury but her observation of the worker's manner, his obvious pain, and his reluctance to see a physician seemed to indicate a more serious condition. Without waiting for the physician's next regular visit, the nurse sent the man for an x-ray which revealed a moderately advanced giant cell tumor of the head of the tibia. Fear had kept the man from reporting, and it was this fear that the nurse observed and acted upon.

Getting this man to accept immediate medical attention called forth the nurse's teaching ability. Physicians and management alike would be amazed at the number and types of questions the average industrial nurse is expected to answer. Human beings are both intelligent and extremely gullible. Newspapers, radio, television and magazines help to confuse as well as to inform. The nurse often finds that she must explain to the executive vice-president why "a shot of penicillin won't cure his cold, and to the plump file clerk that 'Helps' or some other patent reducing fad won't help to make her slim unless she cuts down her consumption of candy."

Among young women, their physiological processes are, even in this enlightened age, still shrouded in misinformation and superstition. I would hestitate to give a percentage figure on the number of well educated young women who still believe that bathing, hair washing, and normal exercise are harmful during menstruation. Many of them also believe, quite sincerely, that the first day of the period should be spent in bed. When these young women marry and become pregnant they are advised by their parents, husbands and friends to "take things easy" and avoid crowds. The industrial nurse usually sees these women at the time they come in to ask for special hours of the "come late, leave early" variety. I once suggested to one such young bride that she come to work half an hour earlier and perhaps she could then leave early in the evening. The look on her face showed me that she was not only surprised but shocked by my unfeeling attitude. However, this afforded me an opportunity to teach her that her condition need not and should not upset the routine of her life as long as her physician had said she could work.

In an effort to use the teaching skills of the industrial nurse in just these problems, one large firm which employs a large number of young women, is experimenting on a new plan. The preplacement and periodic physical examination in the 18-35 age group is limited to x-ray, blood tests, urinalysis, and eye examination. The employee is then interviewed by a nurse who discusses the results of the examination and then goes on to talk about personal hygiene, nutrition, dental care, emotional adjustments, or whatever the employee seems to be most concerned about. Very often the employee is referred to this nurse by a supervisor, or she may come in voluntarily. The program is still too young to judge its effectiveness but it does seem to show that employees will discuss health problems if given a listening ear. Also, in most cases, they are anxious to accept guidance in solving their health problems.

I have covered briefly how a good industrial nurse can contribute to the conservation of health in industry. She collects facts, she observes, and she teaches. These are by no means all her contributions, but they are those which can best be used in a positive health conservation program. There are many industrial medical units where the nurse operates in an atmosphere where these skills are used effectively. However, my own experience as a consultant often leaves me discouraged because there are so many situations where the nurse is either handicapped by her own limitations, by management policies, or by the lack of or type of medical direction. This most often occurs in plants with less than 1500 employees, but these plants employ over 80% of the working population!

As I said in the beginning, conferences like this should be used to develop policies and find solutions. We can tell industrial nurses what they ought to be doing and how plant A or B conducts a health conservation program but I am not sure that this is the kind of help they need. Professionally, we ought to give industrial nurses more assistance before she begins her industrial career and we ought to be more vocal about what management and the medical profession can do to make our jobs more effective. After nine years of visiting industries in three states, I believe these are some of the problems which need to be considered.

### From the Nursing Profession

1. MUCH more opportunity needs to be provided for industrial nurse education. Industry has become so complex that it is the rare nurse who has sufficient basic knowledge to deal with all industrial health problems. Whether this knowledge comes during her basic education, on a college level, or is given through workshops and seminars matters little. That more education is wanted is obvious from the fact that nurses attend classes and workshops in large numbers wherever they are offered.

2. In order to offer classes there must be competent people to teach. Encouragement should be given to outstanding nurses to qualify for teaching positions.

3. My work has convinced me of the values of nurse consultants but there are not half enough to go around. Consultants working for insurance companies often cover several states. Consultants working with state or national agencies usually number one to a state—in heavily industrialized areas the consultant can only scratch the surface. Helping a plant establish a new health service often takes weeks of work before it is operating

smoothly. The chief value of an industrial nurse consultant is that she is able to offer the nurse and management help at the job level. The development of more consultant service will, of course, require more educational facilities for training as well as greater demands from the employer.

### From the Medical Profession

1. MORE information available to general practitioners and the physicians who do part-time work in industry so that the general practitioner may understand the relationships between his patients and their jobs. Thus will physicians become more aware of the usefulness of the industrial nurses in contributing to health conservation in thousands of factories. The part-time physician needs as much knowledge about industrial health as the full-time Medical Director but many have problems in establishing proper interplant relations and policies. It is not uncommon to find a part-time physician who is asked to do physical examinations, re-dressings, give health advice, and try to administer the Medical Department in one hour twice a week for a plant of 700 to 800 employees. This leaves very little time for discussions regarding health programs between the physician, the nurse, and management. The nurse in a small plant looks to the plant physician for leadership, guidance, and support. The physician, therefore, needs to know enough about broad industrial health principles to be able to give this leadership.

However, there is evidence that industrial medicine is being brought closer to the general practitioner. Forward-looking medical groups such as the IMA, the Council on Industrial Health of the AMA, are working on this problem. For example, the Industrial Health Council of the Milwaukee County Medical Society is currently holding meetings for the general practitioner. The New York State Society of Industrial Medicine is offering instruction to the part-time physician. Various medical schools throughout the country have departments of occupational medicine.

### From Management

1. MORE uniform policies regarding health conservation. Except in very large industries, there are almost as many policies as there are plants. One plant allows the nurse to give all sorts of unnecessary services; another allows her to do nothing but first aid. This is not health conservation.

2. Management should ask advice of authoritative sources when they wish to establish a Medical Department. The National Association of Manufacturers, the Safety Council or any of the groups meeting at this conference are ready to help industrial management get started properly. It is wise to use the services of either the consultant nurse from the insurance company or the state labor or health departments.

3. Employers should use the available professional employment services when they select an industrial nurse. Many of these agencies will help screen applicants so that the right nurse is selected for a particular plant. Too many employers are still deluded into thinking that they can employ a nurse who will be a clerk first and a nurse in her spare time. The nurse represents the health profession to the workers. If her personality and preparation are such as to gain their respect and confidence, her professional skills should be fully utilized.

4. If industry wishes to be assured that there will be enough nurses to give them the kind of health maintenance their employees want and need, we would like to suggest that industry might bear some of the cost of education.

### Summary

THE industrial nurse has an important role in the conservation of the health of industrial workers of any age level. She brings to her job ability to record, observe, and teach. In a well planned Medical Department, based on sound policies supported by management and directed by the physician the nurse can prevent lost time and aid the workers and the industry by conserving physical and mental resources.

### References

1. STUART, D. M.: Men and Women of Plantagents England. Harcourt Brace & Company, 1932, 154-155.
2. Health Advisory Council, Chamber of Commerce: Health An Economic Asset. Washington, D.C.
3. CRUIKSHANK, F. D.: The General Practitioner and Industry. *Ontario Med. Rev.* (November) 1951.
4. PETRI, LESTER M., M.D.: Health Maintenance in Small Plants. *South. Med. J.* (June) 1951.
5. WEISNER, MARGARET, R.N.: The Industrial Nurse and The Interview. *Nursing World* (November) 1952.
6. BAILEY, ELEANOR C., R.N., and FRASER, ELIZABETH C., Statistician, Division of Occupational Health, U.S. Department of Health, Education & Welfare: Nursing Services in Small Manufacturing Plants. *Nursing World* (November) 1952.
7. PIGARS, PAUL: Effective Communication In Industry. National Association of Manufacturers, Rush Toland, Memorial Study No. 1, 1949.

# Human Relations and the Young Employee

R. LOMAX WELLS, M.D., F.A.C.P., Medical Director
The Chesapeake and Potomac Telephone Companies, Washington, D.C.

PRIMARILY this conference is built about human relations in our younger work group. This does not mean that we are ignoring, or have forgotten our older workers. It does mean that we recognize that there are some differences in the problems presented by the two groups. Do not misunderstand me. Kindness and understanding; the direction of activities, and of purpose; the ability to listen and to counsel; and the deep appreciation of each worker as an individual human

being are common to the needs of all age groups. By seeking the answers to some of the problems peculiar to, and adherent in, youth, it is our hope that we will build a better foundation for continuing good human relations throughout the future.

Human relations are our inter-personal relations with all with whom our daily life brings us in contact—our family, our friends, our fellow workers, the bus or cab driver, the waitress who serves us our luncheon. It is a matter of our attitude toward each and all, what we say, what we do; the way we say it, and the way we do it. It is you and I, how we work together, and our understanding of one another. Good human relations is honesty of thought and action. In it there is no room for hypocrisy, nor, may I add, is there any room for complacency with ourselves. All people are endowed with the same fundamental emotions but many factors influence the development of the dominant ones that go into the molding of characters and personalities. You cannot cut a single pattern of action for all circumstances. But basic truths do exist so that knowledge, understanding and usage of these truths cut to the pattern of each daily contact will minimize errors in our inter-personal relationships.

In our discussion of human relations in the younger worker, we give consideration to both members of the team—the management members and the non-management members. We have heard the viewpoint of top-management, the psychologist, the dentist, and the industrial nurse. For a moment, I would like to look at management through the eyes of the industrial physician employed by that management to counsel with it and guide it in matters affecting the health of *all* workers in the organization. First of all I would say, a physician in industry must have the firm conviction that the men who manage the business have a genuine belief in the inherent dignity of the individual and an acute understanding of how the dignity of individual rights can be wisely molded into the dignity of the group as a whole. Management's understanding is essential to maintain an effective working group and an efficient production level. This means there is a happy, satisfied group, working as people interested in their jobs, doing them well, and helping to produce a profit for the business, and for themselves. People, production, and profit are inseparable.

The managers of a business must provide the tools of production and service. They must be efficient managers of men and machines. I know that there are good bosses, poor bosses, and mediocre bosses. I know that there are bosses with tempers, with impatience, and some with a high degree of ego. I also know that there are bosses with infinite patience and understanding and a high degree of know-how in many, many areas. By this same token, there are workers at all levels with these same emotional patterns. That makes them all human! Therefore, through the eyes of the physician, management should be viewed as human beings. The traits, and skills and personalities and experience that led them up the ladder do not alter the fact that they are human beings and subject to the same inter-personal variations found at any other level of the organization.

Now, I wonder how the younger employee really views the bosses. Certainly there are new workers who must have some fears—fear they won't please their bosses, fear that their work won't be done just right—all before they know their jobs or have a chance to demonstrate their skill and ability and their mettle. And thus, unless the new employee's immediate supervisor has a real interest in him and an understanding of the possible existence of such fears, he might very well, and quite unwittingly, nurture fears that later can and do become deep-seated, associated with frustrations, and lead to poor emotional adjustments to the job.

On the other hand, there obviously comes into the working force (despite careful hiring practices) a certain number of younger people totally unconcerned about the future and who are simply working as a means to an immediate economic end. They are not essentially concerned with the future. Their attitude toward attendance and the job is one of "so what." Certainly, this group must look at management (if it looks at all) through dark-colored glasses. In this group also are the mal-contents, the wanderers, the misfits, the troublemakers. Some of these are salvaged, I am sure, by patient supervision.

A third group simply comes into work, does its job, collects its pay and goes home—all without enthusiasm and probably without any particular concern about the management of the business. All three groups present a challenge to management and a challenge to those of us dedicated to the problems of occupational health.

Two experiences in our own companies, one management and one medical, will direct your attention to the approach to this matter of human relations in the younger group.

In a study of employees who visited two of our metropolitan area medical offices during 1952 and diagnosed as having nervous disorders, 51% were 35 years of age or younger. Eight-six percent of this younger group had a functional diagnosis while only 14% had organic disease. This points up very clearly an area in which the industrial physician and the nurse, through understanding, wise counseling and guidance, can obtain effective results. It also represents an area which demands investigation of both on-the-job and off-the-job emotional conflicts. In our experience, the majority of conflicts are not job-induced; they are the result of some off-the-job problem. This requires alert observation and tact on our part. The health services can guide both the employee and supervisory personnel into a mutual understanding of the problem. Verbal catharsis can relieve much tension; we must be good listeners.

It is in our younger group that early attention to such situations will pay dividends in helping

avoid fixed patterns of emotional disturbance and poor attendance.

An effective preventive approach to off-the-job situations is reflected in another study. One of our companies made pre-employment visits—980, or 84.4% of the applicants were interviewed in their homes. From these visits 10.8% of these applicants were not considered qualified for employment on the basis of home conditions (31%), home responsibilities (40%), not permanent (18%), lack of dependability (5%), or other reasons (6%).

Personnel employed after careful screening through home visits appeared to be better employees. To substantiate this, 75 persons employed before the home-visit program was instituted were compared with a group of 75 persons who received home visits. Their supervisors rated their work, attendance, and attitude. The results of the study are summarized:

| | | Employed Before Home Visits | Employed After Home Visits |
|---|---|---|---|
| 1. *Work* | | | |
| | Satisfactory | 76% | 86% |
| | Unsatisfactory | 24% | 14% |
| 2. *Attendance* | | | |
| | Satisfactory | 61% | 78% |
| | Unsatisfactory | 39% | 22% |
| 3. *Attitude* | | | |
| | Satisfactory | 79% | 90% |
| | Unsatisfactory | 21% | 10% |

There appears to be reasonable proof that the home visits will have long-term benefits despite the relatively short period of the study: employees stay longer; do better work; have better attendance and better attitudes.

We might, I think, label this as a preventive approach to human relations in that some of the causes of poor inter-personal relationships are visualized in advance and not admitted to the work force.

In a panel discussion of this kind, I am not certain that a simple exposition of one's own ideas and theories and an attempt to philosophize a bit is sufficient. Therefore I am assuming the perogative of offering some SUGGESTIONS:

## To the Industrial Physician

1. DO NOT forget the art of medicine through absorption with the scientific.

2. Take every opportunity available to assist the managers of the business in the early detection and correction of problem cases, for example, those emotional problems which come early to your attention as a result of employee-employer conflicts or as a result of what would appear to be poor or improper placement on the job early during the course of employment. In addition there are certain patterns of illnesses which can be detected early and about which the management of the business should be informed. Do this in the spirit of helpfulness to all parties.

3. Remember that one of the first impressions gained by an applicant for employment is in the Medical Department. Show the applicant you are interested in him as an individual. This personal friendly approach will certainly help start him on his new job with a feeling of being wanted. I also think this enables you to do a better examination. Furthermore, I am sure that you get a better history.

4. Continue to study the problems of attendance. I would like to suggest that you use the positive approach of talking about attendance rather than the negative approach of talking about absenteeism.

5. Remember that when you are treating the patient, you are treating the business.

6. Be alert to areas of potential trouble within your plant stemming from poor supervision-employee relationships.

7. Counsel, guide and assist, but do not take sides when there are areas of disagreement. Be neutral and be fair.

8. Remember that every contact with an employee, whether that employee be management or non-management, and regardless of the level of the organization, offers you an opportunity to teach and practice good health and good human relations. I think this is especially applicable to our younger workers as we build for the future.

## To the Industrial Nurse

1. I WOULD stress with you, as I have with the physician, that every contact you have offers an opportunity for guidance and counsel.

2. Constantly use sympathy, curiosity, interest, and a desire to help if you are to develop a constructive attitude of optimism toward the many problems presented to you.

3. You must also recognize that your own emotional life may color your handling of a case to the point where your effectiveness is lessened or destroyed by over-anxiety, paternalism, over-sympathy, protectiveness, or by annoyance, distain, anger or disgust. And please let me hasten to say that this is not peculiar to the nurse. This is something that is equally applicable to all of us who are here today discussing this problem.

4. Tradition places the nurse's function close to the physician by training and experience. You and I are rightly proud of that tradition. I believe that you have an unusual opportunity with the younger worker in teaching him good human relations by the way in which you handle him no matter why he comes to the Medical Department.

5. A worker must trust and admire his leaders and he must feel that he is understood by his supervisor. I think that this is peculiarly true in the younger worker. I am confident that you, in industrial nursing, do contribute to the development of these basic needs of employees through your cooperative efforts with all the members of the firm. I congratulate you on the effectiveness of the job which you have been doing.

## To the Industrial Dentist

MUCH of what has already been said is equally applicable to you in your special field. I can only add that I hope you will continue to pour

pearls of wisdom and kindness into the ear of the patient while the oral cavity is exposed and to be particularly alert to the needs of the younger people in the business.

## To Management

1. CONTINUE to implement the good job being done in developing company-sponsored courses in human relations.

2. Remember that this can be further implemented by keeping open the lines of communication between all levels of your organization.

3. Make good inter-personal relations with your subordinates a natural daily way of life. They, in turn, will pass along this way of life to those reporting to them. By so doing, good human relations will diffuse throughout your organization. Such diffusion will prevent the possibility of transfusion later on.

4. Strengthen and fortify your front lines, for these are your lines of success. The attitude of immediate first-line supervision cannot be overestimated in its importance in molding the younger worker with respect to all elements of the job throughout his working life.

5. Search out the humdrum and monotonous jobs in your business—the ones that do produce frustrations. Do something about them. There *are* ways to develop interest and break monotony even though the job may not lend itself to "glamourizing."

6. Continue to develop your courses of orientation and indoctrination and early in the employee's life, let him know he belongs, and is a member of the team.

7. Give consideration, if you have not already done so, to the utilization of employee attitude surveys. They are good "eye openers" as to what employees think about their jobs, their supervisors, and the company. They open up channels of improvement in many areas, especially in the field of human relations.

8. Do not forget that the control and direction of job attendance and performance is a management perogative. We, here as physicians and nurses and dentists, can only supplement your job. And finally, to all of us—let's be human.

---

## Corporate Citizenship

THOSE charged with the responsibility of managing industry are realizing more and more that corporations have an obligation to assume many social and educational responsibilities that formerly were carried by persons of large means. These broadened responsibiiities of corporations are being accepted today as part of the new pattern of corporate citizenship. More specifically, many of us in industry realize that our responsibilities include the obligation to help improve health facilities and through them the health and living standards of the people who work in our factories and offices. This growing interest of industry in our national health is not the result of pure philanthropy. It simply makes good business sense. We live in an industrial age, with the majority of our population employed by industry. Consequently, health and medical standards today are very different from those believed adequate in the agrarian society that prevailed in America 100 years ago. We have learned, for example, that a physician cannot adequately treat a patient in the home without taking into consideration certain factors in his working environment. The doctor will want to know if he is working under tension, if his job is monotonous or interesting, if he works at a desk or on a production line. All these things and, of course, many others are pertinent to the treatment of numerous illnesses in an industrial society. At the same time, we have learned that the efficiency of the man on his job is greatly influenced by his health, his home life, the community in which he lives—by his entire social environment. There are studies, for example, that prove that the American working man is safer today on his job than during his leisure hours. Yet he is off the job 16 hours a day and only in the plant or office eight hours. It is a matter of record that nine-tenths of the accidents and illnesses that cause absenteeism in business and industry are directly traceable to conditions in the home and community—to factors completely unrelated to the employee's work. I think it is obvious to anyone understanding these things that private physicians, health officers, medical educators, and corporate managers must join forces in solving our health problems. This team, working closely together can give the American working man and woman better health, better working and living conditions, and increased efficiency on the job—all of which inevitably lead to increased income and greater job security for the employee. Management and stockholders also benefit. Good health among industrial workers is certain to result in reduced absenteeism, less employee turnover, improved morale, and generally better industrial relations, which contribute to a more efficient work force and higher productivity.

—From "Progress of the National Fund for Medical Education," by WILLIAM C. STOLK, President, American Can Company, *J.A.M.A.*, April 3, 1954.

# President's Page

FOR THE last several years each newly installed President of the Industrial Medical Association has realized, as he took over, that his position was not only an honor and an opportunity but also that it embraced certain elements of a timely emphasis. This emphasis, seized upon and translated into action, became the basis of a distinctive and memorable service, by the then incumbent of the office, to the Association and to the field of medicine as applied to the needs of industry in general. So it was when education was in the forefront of the fast-moving developments that have characterized the last two decades. And the same regarding the Association's membership, and usefulness to its members; and Medical Department surveys and approvals; and intra-professional relationships and specialty status. Each had its year of special note, and its protagonist of special purpose.

Currently the emphasis is on the liaison between medicine and management. Under the stress of the mechanization of industry, with the accompanying trend toward more thorough training and education of the workers, this liaison has grown into a definite and firmly established relation. Constructive health maintenance of the industrial employee is being recognized as a corporate responsibility; the medical aspects of human relations and executive development are among the major concerns of managements; physicians are being trained in the principles of medicine as applied to industry. All this toward the not-distant time when the constructive health maintenance program for the employment situation will be periodically appraised and evaluated in the same manner as the financial phases are analyzed; and when management interest in it will be as important in the management audit as any of the factors usually considered part of management efficiency. The timeliness of the emphasis on the medicine-management relation is confirmed in the as yet little noticed but inescapable fact that forward-looking industries have realized far more fully than the organized medical profession as a whole the value of a good occupational health program.

The elements of such a program as seen from the standpoint of management begin with the concept that each human being, regardless of the state of his health, affects and is affected by all the conditions around him. Thus problems of a medical nature having to do with the employed person are to be considered in terms of how his physical or mental state affects or is affected by his social and working environment. This involves the study of the employee together with the circumstances of his being. Are there unfavorable factors in his life or his work which unless found and corrected may result in physical or mental damage? As Dr. John A. Zapp, Haskell Laboratory Director, recently said: "Because in general medicine we deal so frequently now with diseases of stress, due not to one specific cause but to factors operating over many years, it is obvious that the study of the ultimate outcome, i.e., of the ill person, will not give us detailed information on the development of illness. Only by frequent study of many people, attempting to live in a modern environment, resisting or failing to resist stresses of that environment, can we learn more of what we might term the natural history of stress disease."

The other elements of the successful health maintenance program—from the first step, the placement physical examination, through the pre-promotion study, and the build-up of information from the periodical inventories, and the adaptation to such functional limitations as may be prescribed, to the pre-retirement counseling—all are the daily routine of the industrial physician. The significance of their mention here is that they are rapidly becoming part of the thought-pattern of management. And from that to the practice-pattern is only a short step, and one which is being taken by an increasing number of industries, large and small, almost from month to month. Some evidence of this may be seen not only in the large number of Medical Departments which have been given the Industrial Medical Association's Certificate of Approval as meeting the accepted standards for a health maintenance program, but also in the mounting number of requests for this certification.

Other evidence comes by way of the Health Achievement Award given each year in recognition of the inauguration and improvement *by the management of a company* of a comprehensive medical service for its employees. This was established by the Industrial Medical Association in 1949. In that year the recipient was chosen from among four companies; in 1953 more than a dozen were on the list from which the selection was made. This year the Award Committee "finally narrowed the list down to 18, from which two were selected, each to receive the Award."

The intent, purpose, and hope of this President of the IMA are centered on the medicine-management relation, to the end that by the time of the 1955 Conference, management will have graduated from its heretofore position as something of a patron of medicine to the status of a full and unequivocal partner.

R. L. Pagnus

# Association News

## The 1954 Awards

### The Knudsen Award

THE 1954 WILLIAM S. KNUDSEN AWARD, the highest honor bestowed by the Industrial Medical Association, given each year for outstanding achievement in industrial medicine, went to NILS PAUL LARSEN, Honolulu, T.H. The Knudsen Award Committee included HENRY S. BROWN (Chairman), E. A. IRVIN, and M. H. KRONENBERG.

### Health Achievement

THE HEALTH Achievement in Industry Committee—J. F. McCAHAN (Chairman) and O. T. MALLERY, JR.—"having eventually narrowed the field to the top 18 candidates finally concluded that there were *two* companies that stood out from among the rest." This Health Achievement in Industry Award is given *to the management* of the company "which during the current year has made a significant contribution in the field of industrial medicine through the development of an outstanding comprehensive health service for its employees." The two companies selected for the 1954 Awards were the R. R. Donnelley and Sons Company, ARTHUR K. PETERSON, M.D., Medical Director, Chicago, and the Inland Steel Company, Indiana Harbor Works, H. GLENN GARDINER, M.D., Medical Director, East Chicago, Indiana. The health services thus recognized will be described in some detail in later issues of this Journal.

### Medical Authorship

THE CITATION for Excellence in Medical Authorship was decided upon by the Committee which included C. P. McCORD (Chairman), R. E. ECKARDT, J. S. FELTON, and E. L. WALSH. This Citation recognizes "excellence in material and authorship of scientific and administrative contributions to the published literature in the field of Industrial Medicine and Occupational Health and Hygiene." For the year 1953 it was given to "JOSEPH M. DeNARDI, M.D., H. S. VAN ORDSTRAND, M.D., GEORGE H. CURTIS, M.D., and JOHN ZIELINSKI, M.D., for the discourse, 'Berylliosis,' in *A.M.A. Archives of Industrial Hygiene and Occupational Medicine*, 8:1, 1-24 (July) 1953."

### Meritorious Service

THE Industrial Medical Association's Award for "Meritorious service to, and in behalf of, the Association" was given to CARL T. OLSON.

### To "Steve"

THIS YEAR there was a Special Award—unusual because it was given a non-member. It was a Citation to STEPHEN GROVER HALOS, "in appreciation of his having shown exceptional and consistent interest in and loyalty to the Association, with regard to all its activities, during his many years of efficient service as President of Industrial Medicine Publishing Company and Director of Exhibits of the Industrial Health Conferences."

The Awards were given at the Annual Banquet, Wednesday evening, April 28, at the Sherman Hotel, Chicago.

# Overseas

### The Economic Scene

WHEN last I wrote the chill wind of adversity was blowing on Australia's economy. As far as international finance is concerned, at any rate, all Australia rides on the sheep's back. It is a deceptive set-up to the eye of a passing visitor.

On the coastal fringe there are perhaps half a dozen cities—most of them vibrant with industry, rushing and bustling with modern urban life, and scattered near them are lush pockets of farming land, sugar in the northern tropics, further south dairying, mixed crops, fruit, vines; in the hinterland immediately behind the coast are larger areas devoted to grain growing, fat lamb raising, and so on. All these areas have their own sizeable towns, self important, busy, and, to the eyes of their citizens, the centre of the universe. Probably nine-tenths, if not more, of the population live in this coastal fringe. This indeed is not so much a rich fringe as a long barren coast line with patches of densely populated rich country here and there. This is the Australia that most Australians know and which the traveller sees. It houses the political, commercial, educational and cultural life of the country. It is as though your country had a closely settled Atlantic sea-board, an area of settlement in California, another in the vicinity of Houston and then practically nothing else.

The greater spaces between these areas are at the worst uninhabitable desert and at the best huge areas of cattle and sheep land. In the latter the houses may be 10 to a hundred miles apart and the towns several hundred, and in some of the worst places it may need a square mile of country to support one beast. It is a land of heat, dust, flies and hardy human beings. This lesson in geography is not thrown in for the sake of erudition, but to lead up to the peculiar economic fact that as far as producing income derived from exports is concerned, the populated areas are very small chips indeed. There is hardly a commodity produced there that in most times hasn't to be helped by some form of tariff protection, subsidy or other social prop. With cattle and sheep, however, the picture is different, particularly with sheep. The latter is a very stupid animal and not a particularly attractive one, but it is tough and by some stroke of luck when placed in the dry inhospitable environment of Australia's interior plains it produces relatively cheaply the finest wool in the world. Why this should be so has so far defied all scientific efforts to explain. Wool at the moment accounts for about a third of the total national income.

After the last World War the price of wool rose to fabulous heights on world markets. Australia had a very healthy overseas credit balance and the people's taste developed for all kinds of imported arti-

cles, many of which were of a luxury or arty-crafty nature. Jobs were plentiful, money was plentiful and Father Christmas came every day of the year—so much so that it was difficult to persuade anyone to take a dirty or heavy job. Then wool fell in price and the national income declined enormously while the luxury tastes continued. To prevent Australia's credit collapse on the international market the Federal government brought in two deceptively simple measures. It prohibited imports, except on license, which meant that all except necessities were kept out, and it made it practically impossible for a man to get credit from his bank or from any other official money-lending source, except for the production of some worth-while commodity.

The effect was akin to throwing a handful of steel nuts in a gear box. In a very short time, however, coal and steel production rose, labour became available for rural activities, and inflation, though not completely "scotched" has become a very weak and wan edition of its former self. For a time secondary industries, particularly those of a light nature, were badly hit, all said they were going "broke"—in actual fact very few did so. Many "mushroom" growth managements found out to their amazement that there was much more to management than flying round the country buying up scarce materials "on the black," many salesmen for the first time had to "sell" goods rather than explain to the customer why he would have to wait a little longer for delivery of his last order, and many employees suddenly realized that they could no longer walk out of a job every month and get another immediately.

It was bitter medicine to take while it lasted and many harsh things were said about the government. However now, what with a firm wool price, better production from all kinds of industry and less useless spending, the economy has righted itself, our overseas credits are good, import and credit restrictions have both been greatly relaxed and industry is busy while jobs are reasonably easy to get. The only snag on the horizon is a possible recession in America or falling prices in world markets for primary produce.

## "Social" Medicine

As I have mentioned before, free life-saving drugs for everyone and free medical attention for old age pensioners have been in force for some time now, and by and large both schemes are working reasonably well. (The Federal government, an anti-labour one, claims that their statistics show that the free life-saving drugs have led to much more domiciliary treatment and a corresponding decrease in occupied public hospital beds.)

The third point—and a much more contentious one—of the "middle-of-the-road" free medicine scheme has only recently come into being. It is akin to a "Blue Cross Plan" on a national scale with certain very radical differences. One of these is that the benefits cover not only illnesses that lead to hospitalization but every consultation with a medical practitioner. The other big difference is that there are three parties to the contract—the patient, the private or cooperatively run Benefit Society, and the government. If you join a Benefit Society you receive not only their contribution to your medical and/or hospital costs but a benefit from the government fund as well. If you do not contribute to a Society, you get practically nothing from the government at all. The sum of both benefits must never exceed 90% of your costs. The idea is to foster those who try to help themselves. "Help to those who help themselves" is the slogan.

The technical teething points are at the moment quite numerous but should be amenable to alteration. It is no doubt a great boon to the middle-class and lower middle-class, and enrollments have already exceeded expectations. It is also a great help to the medical profession. The latter still charge their usual fees. There are no "cut" rates. Two basic queries, however, come to mind. Is the scheme actuarially sound, and can you persuade those people to join who are already accustomed to receiving free medical care from public hospitals? Much technical advice was taken on the first point so presumably there is at least reasonable hope of the scheme's being financially sound. On the second point I am very doubtful. In any community there are always large numbers of people who simply refuse to make any preparation at all for "a rainy day." Whether they are earning good money or not they are used to free medical attention at a public hospital, by and large they are satisfied with it, and they have no intention of "throwing away" good money on a medical scheme which they do not need.

## Occupational Medicine

Some changes have occurred in industrial medical circles. Dr. Cyril Cummins, formerly the Director of the State Division of Industrial Hygiene in New South Wales, has demonstrated the versatility of our specialty by becoming Deputy Director-General of the State Health Department for his State. In his place has come Dr. Roberts who was previously in charge of medical services for the British Post Office. Dr. Roberts, among other things, is a well known authority on sickness morbidity rates in industry. It is a commentary on the Australian industrial scene that there are almost as many employees in the British Post Office as there are workers in secondary industry in New South Wales. The latter is one of the two highly industrialized Australian states.

The Victorian Division of Industrial Hygiene has just about completed a survey of all the state's dusty trades, including mining. It will be one of the most comprehensive undertaken in any part of the world. The war-time and post war-time rush in the building trade was reflected in the growth of the asbestos-cement sheeting and roofing industry. This in turn is now reaping the harvest of abestosis. Nearly all states are reporting a few cases. The finding of sources of atomic energy is also bringing in its train problems for the public health authorities.

A notation on Weil's disease as an occupational hazard recognized by Britain (*Industrial Medicine and Surgery*, 22:9 (September) 1953) prompts me to point out that for some 20 years now this state (Queensland) has accepted the leptospiral infections as compensable. Under my charge is the "Prevention of Weil's Disease Inspectorate"—a body of health inspectors based on the North Queensland cane fields about a thousand miles north of here. It is their job to keep down rats on the sugar cane farms and to see that no rat-infested sugar cane or sugar cane growing on low lying land is harvested without adequate burning.

More recently a Field Research Station—under the charge of Dr. Derrick, the discoverer of "Q" fever—has settled at Innisfail in North Queensland and already five new leptospiral strains have been discovered. In South Queensland "Pomona type" Leptospirosis is recognized as occupational in origin among

meat workers, and pig and dairy farm workers. This applies also to "Q" fever and brucellosis. Under certain circumstances scrub typhus is also an occupational disease. The importance of these "occupational fevers" here may be gauged by the fact that this year I expect that the number of "fever" patients checked and investigated in this Division will be in the vicinity of 600. Many of these of course will remain undiagnosed or proved to be non-occupational, but a substantial proportion will be accepted as occupational in origin. —DOUGLAS GORDON,
Brisbane, Queensland,
Australia.

# Books

## For the Engineer

FLOW AND FAN—Principles of Moving Air through Ducts: C. HAROLD BERRY. The Industrial Press, New York, 1954, pp. 226, $4.00.

The engineering student and the engineer engaged in ventilation duct layout and fan selection will be delighted with this text on the principles and practice of air movement and air movers. The development of formulas is presented step by step to permit ready following of the mathematics, which involves algebra and dimensional analysis but not calculus. Examples of duct systems are clearly shown with the help of simple illustrations. The illustration of the Pitot tube might better have shown the static holes other than by the small lines across the outer tube.

Discussion of characteristics of fluid flow in ducts include the several factors confronting the engineer, such as losses due to diverging and converging passages. The author's experience in teaching this subject is evident in the mention of common mistakes to be avoided such as the erroneous use of quantity of gas rather than velocity in computing friction loss in rectangular ducts, and the failure to observe static pressures in exhaust systems as negative values even though ventilation engineers commonly omit the minus sign.

Nearly half of the book is devoted to fan performance, fan selection and rating, and fan operation and control, with practical as well as theoretical considerations. Data on fans are devoted mainly to the backwardly and forwardly curved blade types rather than the paddle wheel type widely used in industry.

The book obviously is not intended to provide complete information on design of industrial ventilation systems covered as practical working manuals by Alden's "Design of Industrial Exhaust Systems" and by "Industrial Ventilation—A Manual of Recommended Practice" of the American Conference of Governmental Industrial Hygienists. No information is given on exhaust hoods which are included in the two foregoing texts and are the subject of a book of that name by DallaValle. A study of the principles outlined in Berry's "Flow and Fan" will add much to the understanding of the empirical instructions given in the two manuals.

—WARREN A. COOK.

## Radiologic Installations

PLANNING GUIDE FOR RADIOLOGIC INSTALLATIONS. By the Committee on Planning of Radiologic Installations, of the Commission on Public Relations of the American College of Radiology. WENDELL G. SCOTT, M.D., Associate Professor of Clinical Radiology, Washington University, St. Louis; Chairman. Three hundred thirty-six pages; 195 figures and tables, including color plates, photographs, graphs, and diagrams. Chicago, The Year Book Publishers, Inc., 1953. Price $8.00 postpaid.

For the first time in the history of radiology a compact volume is offered as a guide to the planning of radiologic installations. The contributors include 49 experts, representing radiologists, manufacturers of x-ray equipment, Federal Health Agencies, the American Institute of Architects, the American Hospital Association, physicists, all pooling their information in a well-ordered series of presentations.

With the help of this volume the many complex problems encountered in the organization of a radiologic department or private office may be settled, with the avoidance of costly mistakes and disappointments. The text covers the program of work in the x-ray department, radiation protection, the radioisotopes laboratory, special radiological equipment for use in operating rooms and at the bedside. This is a wonderful mine of information, vital and invaluable for all concerned in the achievement of a successful radiologic service. —JAMES T. CASE, M.D.

## Chromate Workers

HEALTH OF WORKERS IN CHROMATE PRODUCING INDUSTRY. Prepared under direction of W. M. GAFAFER, D.Sc.. Public Health Service Publication No. 192, 1953. For Sale by Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C.

Everything that is toxic on further work appears to be a little more toxic than previously determined. As to chromates that statement just made seems to have been confirmed. This publication must be highly important, since five copies have reached this reviewer, not all sent by any one of the authors or the governmental agencies serving as publisher, but by admiring readers tacitly demanding review. That demand is here fulfilled by recourse to a portion of the brochure's summary.

"This report presents the clinical and environmental findings of an investigation to determine the present health status of chromate workers and to evaluate the effects of the working environment on their health.

"Environmental investigations were made in six plants which are directly involved in the manufacture of chromate and bichromates from chromite ore. These plants are located in the states of Maryland, New Jersey, Ohio, and New York, and employ a total of approximately 1,200 persons. The same basic raw material, chemical grade chromite ore ($FeO\text{-}Cr_2O_3$), is being processed by all of the plants.

"Basically, the manufacturing process in all of the plants is the same. Briefly, it consists of roasting the finely ground chromite ore with soda ash or with a soda ash and lime mixture to produce a water soluble chromium compound, sodium chromate, which is converted by acidification and crystallization into crystalline sodium bichromate. Soluble materials other than chromates and bichromates occur in the chromate and bichromate liquors. By-products such as alumina, sodium sulfate, and sodium vanadate may be recovered from these liquors.

"Approximately 1,600 samples of air-borne materials were collected with the standard impringer and the midget impinger. About 100 material and settled dust samples were also analyzed.

"It was found that the dry-end processes generate dusts containing chromite ore, soda ash, roast, residue, and sodium chromate. Sodium bichromate

and sodium sulfate are usually found associated only with the wet-end processes.

"An appreciable portion of the total chromium was found to be present in an acid soluble-water insoluble state, indicating the presence of a form or forms of chromium which are dissimilar from either insoluble chromite ore or water soluble, hexavalent chromium. These acid soluble-water insoluble chromium compounds were found to be associated especially with roast or residue processes, although they were noted in many other parts of the chromate plants.

"The greatest weighted average exposure to chromium-bearing dusts occurred in the dry end with maximum mean exposure of 1.07 milligrams of total chromium per cubic meter of air for mill room laborers. The greatest weighted average exposure (0.17 mg $Cr/m^3$) to hexavalent chromium occurred among potash production operators. Occupations with average exposure greater than 0.10 mg. of water-soluble hexavalent chromium per cubic meter of air included residue mix operators, crane operators, leach operators, sulfate recovery operators and centrifuge operators. The two occupational groups which process residue had the greatest average exposure, excluding tanning compounds, to acid soluble-water insoluble chromium. These groups are residue mix operators (0.17 mg $Cr/m^3$) and residue mill operators (0.15 mg $Cr/m^3$).

"A medical examination was made of 897 chromate workers. Among this group were 10 persons who were considered as having bronchiogenic carcinoma. Of these, eight had, in addition to roentgenological and clinical findings, histological evidence (pneumonectomy in five cases, biopsy in one case, necropsy in one case, and bronchial washings Class V in one case). The other two had, in addition to roentgenologic evidence of bronchiogenic carcinoma at the time of the survey, extension of the lesion in subsequent films and clinical findings of bronchiogenic carcinoma. The mean age of the 10 workers was 54.5 years and the mean exposure to chromates was 22.8 years. This experience gives a rate for bronchiogenic cancer of 1,115 per 100,000 persons for chromate workers which is far above that found among a comparison group.

"A study of the morbidity and mortality experience of male members of sick benefit associations in seven chromate-producing plants showed a great excess of cancer of the respiratory system. There were nearly 29 times as many deaths from respiratory cancer among chromate workers as would be expected based on the experience of all males in the United States. The respiratory cancer mortality rate for colored males was more unfavorable than for white males. The total rate for cancer at all other sites was not higher among chromate workers.

"Perforation of the nasal septum was found among 56.7% of the chromate workers. It was noticed that the colored chromate workers had a greater prevalence of nasal perforations than the white chromate workers. They also developed their perforation in a shorter period of time.

"There is no evidence to show that exposure to chrome compounds affected the rate of dental caries attack. Some chromate workers developed a yellowish discoloration of the teeth and tongue. A higher percentage of chromate workers experienced gingivitis and periodontitis.

"Pulmonary markings suggestive of fibrosis were not important among chromate workers, but bilateral hilar enlargements were noted."

This publication specifically is devoted to chromates. It may not be the entire story as to all chromium compounds as possibly some few are innocuous. Final word is waited, but as to chromates, this publication is superb.

## Inhalation Therapy

EFFECTIVE INHALATION THERAPY: EDWIN R. LEVINE, M.D., ALVAN L. BARACH, M.D., J. WINTHROP PEABODY, M.D., and MAURICE S. SEGAL, M.D. National Cylinder Gas Co., Chicago, 1953, pp. 157, $4.50.

Be not suspicious because this handsome small book is published by the National Cylinder Gas Company, clearly a purveyor. The distinguished editor, Dr. Levine, along with his equally distinguished associates, Drs. Barach, Peabody and Segal, repels any generating misgivings. In the preface is found this language.

"Although no emergency is more hazardous to the life of man than a deficient supply of oxygen, an expert understanding of the principles and methods of inhalation therapy is unfortunately confined to a relatively small proportion of those responsible for its use.

"In this book the various disturbances of respiratory function which result in a diminished pressure of oxygen in the tissues of the body are described and illustrated. One cannot but hope that this information will prove highly useful to physicians, nurses and technical personnel interested in the therapeutic use of gases in clinical medicine. The various syndromes in which inhalation therapy plays an important role have been especially dealt with in order to provide a physiologic basis for the techniques of administration of oxygen, carbon dioxide and helium-oxygen mixtures."

Still further in that preface is found a passage too good not to be quoted:

"Much has been accomplished, especially within the past three decades, since Priestley made his engaging remarks following the discovery of oxygen 175 years ago: 'My reader will not wonder that, having ascertained the superior goodness of dephlogisticated air by mice living in it, and the other tests above mentioned, I should have the curiosity to taste it myself . . . I have gratified that curiosity by breathing it, drawing it through a glass syphon, and by this means I reduced a large jar full of it to the standard common air, but I fancied that my breath felt peculiarly light and easy for some time afterwards. Who can tell but that in time this air may become a fashionable article in luxury? Hitherto, only two mice and myself have had the privilege of breathing it.'"

Truly much has been accomplished since that time, and those accomplishments make the book.

The topping to the monograph is found in its illustrations, but no mention of the artist or artists. The frontispiece dimly reveals "Elna MacMullan." The artistic contribution is here acknowledged. Even a small book is bettered by an index. This book hasn't any.

## Modern Concepts

MODERN CONCEPTS IN MEDICINE: JULIUS JENSEN. C. V. Mosby Co., St. Louis, 1953, pp. 636.

This author has married off Hans Selye to cybernetics and celebrated the nuptials with a fine lot of medical philosophy. This book is no exposition of internal medicine. Rather it is an exposition of the understanding of internal medicine. The author writes with the comfortable ease and gracility of the European which by birth he is. There is found

no feverish demand that here and now his ideas be accepted for all future time. He states his purpose in these words:

"This book has been written to facilitate the understanding of internal medicine. Such small texts as are at present available are but summaries of larger ones, and these in turn burst upon the reader with so much specialized knowledge that the uninitiated are soon completely lost. For many years I have been impressed with what appeared to me to be inconsistencies in medical teaching. Too often distinctions were drawn which could not stand close examination, and definitions were made which did not define."

After further delineation of his objectives, he anticipates protestation in this language:

"The objection has been raised that this approach to medicine would lead to careless methods of diagnosis and treatment. Nothing is farther from the truth. The unitary approach renders pointless many details and distinctions which have hitherto been considered important. However, it also shifts the emphasis to aspects which are more essential but which have hitherto been somewhat neglected; for example, the fundamental biological processes and the factors which determine the ability of the localized structure or of the whole organism to respond to stress. The study of the similarities of stress and stress effect is as important as is the study of their differences. Diagnosis serves three purposes: it throws light on the prognosis, it helps to determine the treatment, and it is sometimes made purely as an academic exercise. The effort spent on this aspect may be better applied to more important tasks."

Already something revolutionary is in the offing, but it is a quiet, gentle sort of rebellion. Then he gets over into the technicalities and a lot of them. Everything from "respiratory acidosis" to the "antigen-antibody reaction." No medical student, the tyro in internal medicine, possibly could lean on this book for his final guidance in that aspect of medicine, but he would make life miserable for those "dyed in the wool," stereotyped professors of internal medicine. Fuel for that procedure is the heart of this book. It is a call for new thinking, new directions, new emphasis, with some willing sloughing off of the old. Just as the book begins a bit whimsically, so it ends almost in the mystical when he writes:

"As one surveys the expressions of thinking men of the age, including men of medicine, it is apparent that the development of Western man has led him into difficulties. It has been the purpose of this chapter to indicate that many of these fall within the sphere of medical interest while they also concern other aspects of human activities. The success of the physician is determined by the manner of his approach to his problems. His own emotional attitude to his patient is decisive. When overwhelmed by the complexities of the times, he may gain strength if he looks back over the centuries: there, sharply outlined against the eastern sky a long figure speaks in simple language: 'Love one another,' 'Do to each other as ye would be done unto,' and 'consider the lilies.' The words reveal a poise and serenity of mind which contrast sharply with the greed and selfish ambition of the present age. Yet, man may hope to realize health and happiness only to the extent that he attains a unity of mind and body which enables him to live within his powers of adaptation."

## Workmen's Compensation

MEDICAL ASPECTS OF WORKMEN'S COMPENSATION: Commerce and Industry Association of New York, Inc., New York, 1953, pp. 104, $1.50.

The usual symposium or the proceedings therefrom on workmen's compensation holds no more appeal for the average industrial physician than an esoteric discussion of African boxwood fever or a theoretical discussion of "keratoma sulcatum plantarum." The burden does not rest upon compensation itself or the individual items necessitating explorations as to compensation. All that may have the appeal, newness and color of a premiere of an opera by Tordini. The difficulty appears to attend the endless generalities of discussions of laws, proceedings, records, statistics and rates. In the production of somnolence, workmen's compensation symposia successfully compete with the more active barbiturates.

These two are different. It may not be as absorbing as the latest "who-dun-it," but there is some approach to that beneficence. Maybe—and only from the point of view of a physician—this quality springs from the fact that these proceedings strictly are medical with only dashes of the legal and the statistical. This reformation as to readability is provided by Drs. Vosburgh, Holman, Spaulding, Knopf, Rusk, and Kessler. Joining that group, but on equal terms as to readability, is the one non-medical speaker, Mr. Stanwood L. Hanson. Even if you have no burdensome relations with workmen's compensation, read this booklet if for no other purpose than to be released from the impression made by some horrendous earlier publications. Compensation has been made something besides digits, statistical arrangements, laws, settlements, and redemptions. Few books reviewed in these columns fully escape a little lashing. In this instance, the chiding runs to a little too much "New York State," for national acceptance and application.

## Sir Henry Morris

MORRIS' HUMAN ANATOMY: Eleventh Edition: J. Parsons Schaeffer, Editor The Blakiston Company, New York, 1953, pp. 1719, $16.00.

Not conceivably could more than a few of the older physicians practicing in industrial medicine hope to pass the examinations imposed upon graduating medical students of this year, or to pass the state board requirements in its written tests. That need not be devastating since few of the bright young graduates of today will be able to excel in the prospective examinations of 20 years hence. Still there is the obligation to have on hand guidance in some of the basic disciplines. Now comes an old friend in a new suit, "Morris' Human Anatomy," in its eleventh edition but still bearing some resemblance to that first edition of 1893. After all, all these editions solely have dealt with the little changing structure of the human body. Since most physicians admit their lack of proficiency in anatomy, although regretting that such is the case and yearning for that old-time familiarity with everything from the iliotibial band to Gimbernat's ligament, this review is limited to some portions of the published historical record of the first author of this monumental publication.

"Sir Henry Morris was the originator and early editor of a Treatise on Human Anatomy that from the first edition, in 1893, to the current eleventh edition bears the name—Morris' Human Anatomy." Albeit that each succeeding edition of this Systematic Treatise gives evidence of constant changes and important advances in the science of anatomy, the

name of the originator is still honored on the title page of the book, and reference continues to be made to his studies, teaching, and published work.

"Sir Henry was a distinguished surgeon and teacher, an accomplished writer and speaker, and an able organizer and administrator. An acquaintance refers to him as 'a striking figure, tall and well proportioned.' He was born in Sussex, England, January 7, 1844, the son of William Morris, a surgeon of Petworth, and died at his home in London, June 14, 1926. He received his preliminary education at Epsom College, where he was one of the early entrants, in October, 1855. After Epsom he proceeded to University College, London, graduating from this seat of learning in Art, receiving the B.A. degree in 1863. He became a student at the Medical School at Guy's Hospital and was awarded the M.B. degree in 1867. The University of London honored him with the M.A. degree in 1870. The honor of Baronetcy was conferred upon him in 1909.

"Following the completion of his medical course, he served for a time as Assistant Medical Officer and House Surgeon at Guy's Hospital. From 1870 to 1905, Sir Henry held important and ever-mounting positions of rank and honor as surgeon and teacher in the Middlesex Hospital; from 1872 to 1881 he lectured on Anatomy and from 1881 to 1896, on Surgery. At Middlesex he was Examiner in Anatomy for the Fellowship, 1884 to 1889; Member of Council, 1893 to 1914; Hunterian Professor, 1898; Bradshaw Lecturer, 1903; President, 1906 to 1908; Hunterian Orator, 1909. On his retirement from the Middlesex Staff, he was appointed Consulting Surgeon to the Hospital. His surgical acumen and organizing ability were recognized as outstanding. His achievements in the Cancer Ward at Middlesex were especially noteworthy. He is credited as being the first surgeon to perform the definite operation of nephrolithotomy, in 1880. In addition to his early work on the textbook of anatomy that bears his name, he was the author of a standard text titled 'Anatomy of the Joints of Man,' and of a 'Treatise on Surgical Diseases of the Kidneys and Ureters.'"

## Music

MUSIC THERAPY: EDWARD PODOLSKY, M.D., Philosophical Library, New York, 1954, pp. 335, $6.00.

For the moment, laying aside the dictates of objectivity, a willingness was to prepare a cheering and cheerful book review if for no other reason, its engaging title. That willingness persisted, but has had its affronts. At one point this book states without reservation that at the University of Michigan, through the Department of Music, courses for the training of music therapists are provided. A bit eagerly the School of Music was sought out for the details. A little icily that School indicated that it was not offering such courses, never had, and, as foreseeable, never intended to. That disclosure began to throw its shadow on the well-meaning reviewer.

Human minds sometimes run to the dominating quantitative, as in the case of minds of statisticians. Sometimes the mental processes appear purely as qualitative as for the poets. Between, there appear many gradations. In the case of musicians, it may be conjectured that their minds run to the qualitative. If that be true, that quality runs through his book. Everywhere here is too much of the qualitative, and the resting on opinion rather than upon evidence. Several physicians contributed to this volume, but numerically the dominance is non-medical and dominantly this book is not objective.

At every turn the medical profession at its work, is encroached upon by near-to medical activities. Many of these encroachments are commendable, particularly when that encroachment is cautious. In the instance of music in medical therapy, the approach as set forth in this book is one of pouncing—total invasion. While there is nothing new in the utilization of music in behalf of the disease, the incursion now in evidence essentially sets up music as a specialty within medicine. Thus we have musical offerings especially adapted for depression, for the moderation of anger, for tension headaches, for high blood pressure, for acute grief, for heart disease, for gastric disorders, and so on. Not only is music advocated, but prescriptions are precise. Thus in connection with music in electro-shock therapy, among other selections recommended for the preparation period is Saint-Saens' "Carnival of Animals." For the awakening period, Debussy's "Golliwog's Cake Walk," and for the ebullient after period, Barnett's "Six Lessons From Madame La Zonga." Not all of this is highly convincing. In the appropriate musical therapy for gastric disorders, what could be better suited than Satie's "Three Pieces in the Shape of a Pear?" This musical foray into therapy thus lends itself to some charges of having qualities of the ridiculous. The sober appraisal is that the eager musicians may have gone too far. Still this book is not without contributors attended by the cautious. It is easy to subscribe to the opening language of one chapter now quoted: "Physicians and musicians alike have desired more accurate knowledge about the value of music as an accessory therapeutic tool. Extravagant claims have been made regarding its efficacy, but few claims have been substantiated by carefully measured and controlled conditions."

## Alcoholism

EUROPEAN SEMINAR AND LECTURE COURSE ON ALCOHOLISM (Copenhagen, Denmark, 22 October-3 November 1951). World Health Organization, Geneva, Switzerland, p. 121.

An often encountered impression registered upon the minds of the tourist or other visitor from the United States to European countries is that on continental Europe alcoholic drunkenness is a rarity and that in some measure a bit of shame should become the United States' lot because of our widespread indulgence in hard liquor and particularly in our indulgence in cocktails—concoctions viewed with amazement in many European circles.

The truth is that few countries the world over are not subject to the problems of alcoholism, whatever the favorite potion of the numerous nations. Surprisingly enough, in highly recent years France (long given to the universal consumption of wines with little serious alcoholism) is changing over into a country in which alcoholism is becoming disturbing. The universality of alcoholism is the basis for this World Health Organization pamphlet on that topic. But there is no leveling off in the direction of any one country; rather the pointing finger is to alcoholism itself.

As the last item in the booklet, the distinguished group, in an appendix, records its deliberations on the importance of alcoholism in industry. A single revealing paragraph is borrowed:

"It should be noted, however, that the great majority of drinkers, both in the town and in the country, are recruited from among individuals without a definite occupation who are classified generally as labourers and have not served an apprenticeship. In such cases, alcoholism affects people with a low

cultural level, who also have little power to resist the pressure of social habits and the result of excess. Subjects with a higher standard of education sometimes come to join the ranks of the workers; here a proclivity for drinking or untimely acts of drunkenness have debarred them from their previous occupation. The drop to a lower occupational category is clearly the consequence of alcoholism, but it cannot be said that the new occupation was chosen because of opportunities for excessive drinking. It has also been pointed out that in certain countries, because of an unusually heavy demand for labour, accompanied by a spell of prosperity which it would be unwise to consider permanent, a large number of young people attracted by immediate and easy earnings are being diverted from apprenticeship. The lack of qualifications is likely to produce alcoholism later on in case of unemployment."

While there is no warrant to carp and cavil over a single paragraph, those statements just recorded might be challenged. No small proportion of alcoholism in the United States escapes the executive level and particularly the secondary managerial level.

In truth, all too much alcoholism does afflict laboring classes but there is no reason whatever to adjust the blinkers so as to see the devastation of alcohol in the higher brackets.

### Sit Lux

INDUSTRIAL LIGHTING: United States Department of Labor, Bureau of Labor Standards, 1953. Limited number of copies for free distribution.

A reprint of American Standard Practice for Industrial Lighting, approved August 22, 1952. This is the last word and is good!

# *Letters*

### Optimistic Note

TO THE EDITOR: I enjoyed very much the article by William F. Becker, M.D., in the December, 1953, issue on "Hydrocortisone Therapy in Ganglia." At the present time this appears to be a promising method of treatment and certainly is much easier to get over to the patient than surgery, which in many instances seems to be out of proportion to the symptoms and the objective findings. I have one suggestion, however, for Dr. Becker, in the nature of a criticism of this article and a suggestion for a subsequent article. No mention is made of the length of follow-up in these patients. Admittedly it is short, since this method of treatment has only come in to being in recent months, but this article loses much of its value since the follow-up period is so short. I should like to see Dr. Becker institute a study whereby these cures could be called back and checked from time to time to study the recurrence rate, and publish the results subsequently.

I should also like to comment on the article entitled "The Painful Elbow" by Gennaro G. Maida, M.D., in the same issue. Dr. Maida was pessimistic as to the results of treatment of tennis elbow or epicondylitis, lateral and or medial. The impression I received from reading his article was that some treatment was indicated but that if the condition did not respond, don't worry about it and let it be; these patients will always get better. I think at the present time our method of treatment has progressed to where we have much more to offer these patients than the rather dismal prognosis Dr. Maida propounds. I have had considerable success with hydrocortone and novocaine injections and manipulations of the involved area. There are many methods of treatment of tennis elbow, and usually, if one is persistent enough, a cure can be effected. It is the rare case where disability and pain persist. I should like to add this more optimistic note in contrast to the rather pessimistic views of Dr. Maida.

—E. LOOPESKO, M.D.

### Student Visits

TO THE EDITOR: As a part of the preventive medicine curriculum at Oklahoma University Medical School, students in their senior year visit industries over the state for the purpose of making industrial medical surveys. Four of these young physicians, Royce Morgan, John Jennings, Lawrence Mann, and Charles Marsh, recently spent some time with us here in Bartlesville. An intensive study was made first-hand of our company medical policies, procedures, and purposes, and how our work is correlated with other departments in Phillips, such as personnel, safety, etc. The outline set up by Dr. Jean Felton, which appeared in the December, 1952, issue of *Industrial Medicine and Surgery*, was followed rather closely. Other similar student visitations are taking place over Oklahoma to industries that have planned medical programs. I am satisfied that these young men left Bartlesville with greater respect and enthusiasm for industrial medicine. Such phases of the undergraduate teaching program, in my opinion, are surely worth-while.

—KIEFFER DAVIS, M.D., Medical Director,
Phillips Petroleum Company,
Bartlesville, Oklahoma.

Royce Morgan, John Jennings, Kieffer Davis, Lawrence Mann and Charles Marsh.

# INDUSTRIAL MEDICINE AND SURGERY

Editor CAREY P. McCORD, M.D.



Associate Editors:
HENRY S. BROWN, M.D.
JAMES T. CASE, M.D., F.A.C.S.
NATHAN SMITH DAVIS, M.D., F.A.C.P.
S. CHARLES FRANCO, M.D.
LYDIA G. GIBERSON, M.D.
CHESTER C. GUY, M.D., F.A.C.S.
EDWARD C. HOLMBLAD, M.D., F.A.C.S.
RUTHERFORD T. JOHNSTONE, M.D.
ADOLPH G. KAMMER, M.D.
ROBERT T. LEGGE, M.D., F.A.C.S.
CHRISTOPHER LEGGO, M.D.
ARTHUR R. METZ, M.D., F.A.C.S.
M. N. NEWQUIST, M.D.
CARL T. OLSON, M.D.
ROBERT COLLIER PAGE, M.D.
OSCAR A. SANDER, M.D.
WILLIAM P. SHEPARD, M.D.
FREDERICK W. SLOBE, M.D., F.A.C.S.
JAMES K. STACK, M.D., F.A.C.S.
ROBERT M. WATROUS, M.D.
WARREN A. COOK, A.B.
HENRY FIELD SMYTH, Jr., Ph.D.
WILLIAM P. YANT, D.SC.
EDWARD R. ASTON, D.D.S.

Overseas:
DR. AXEL AHLMARK, Sweden
PROF. DR. MED. E. W. BAADER, Germany
DR. JOHN F. EUSTACE, Ireland
DR. DOUGLAS GORDON, Australia
DR. GIOVANNI PANCHERI, Italy
PROF. DR. JOSE PEDRO REGGI, Argentina
DR. A. SALMONT, France
DR. G. W. SCHEPERS, Union of South Africa
DR. PERTTI SUMARI, Finland
DR. A. R. THOMPSON, England
DR. A. UYTDENHOEF, Belgium



ESTABLISHED 1932

Publisher A. D. CLOUD

*Volume 23* MAY, 1954 *Number 5*


## New Jeopardy for Industrial Physicians

OVER THE YEARS a point of law bandied about relates to the vulnerability of the industrial physician to malpractice suits on the part of medically treated workmen who have received the appropriate benefits of workman's compensation. The consensus of opinion developed among skilled attorneys long has been that rightly the disgruntled or clearly maltreated workman-patient once having elected the coverage of compensation is without further opportunity at law. Through legislative enactment in the State of Michigan (1952) (with the possibility of similar interpretation of existing laws in some other states), all uncertainty is removed on that score. Regardless of acceptation of compensation benefits the industrial physician or any physician carrying out treatment as provided under compensation enactments is subject to malpractice suits. In some quarters this smacks of being in the nature of an additional fringe benefit. Thus it becomes patent that even on the basis of whim or caprice any industrial physician may be sued at the will of any workman-patient on the slightest pretext of misfeasance, malfeasance, or nonfeasance. To make the matter even more complex and threatening to the industrial physician it comes about through current legal interpretation rather than through any known statutory enactment that although the physician be employed on a full-time basis by industrial management or otherwise on salary, his position as to malpractice claims is not one of agent of the employer. The physician alone becomes responsible for his medical acts. The theory behind such interpretations springs from the well established dictum that a corporation may not practice medicine. Some uncertainty attends the position of the full-time employed industrial nurse and the degree of responsibility of the physician in charge of industrial nurses and other assistants employed by industry. However there may be less uncertainty that the corporation employer of a nurse may itself be saddled with financial onus as to malactivities, real or fabricated, of the industrial nurse. Professionally she may not act as an agent of management. By any reckoning the industrial physician finds himself holding something besides his emergency bag.

By way of protection it is suggested that industrial physicians may do well to consider the desirability of seeking as a part of the financial arrangements as to employment, paid-up malpractice insurance year by year. In lieu of this possibility, the physician himself in order to sleep well at night might obtain at his own expense suitable protective coverage. In this day the traditional $5,000-15,000 policy is a driblet. The $100,000 policy is closer to the jeopardy. In any case, keep quiet about it. Known malpractice coverage is a direct invitation to lawsuits. The usual and often times misguided jury when it brings in a verdict favorable to the plaintiff has the quaint practice of making the award never less than the amount of known protective insurance. Of course, mention in the courtroom of knowledge of existing protective insurance may then and there become the basis of demand for mistrial.

## The Fragile Ear

AS NOISE and noise deafness continue to mount in significance in relation to industry, industrial medicine, compensation, and lawsuits, one of the handicaps is that the medical profession is lacking in methods and equipment for detection and measurement that might be applied in dis-

tinguishing occupational deafness or partial occupational deafness from hearing impairments incident to causes other than work, and particularly the ordinary deafness frequently encountered in the usual aging processes. Much remains to be accomplished, but one of the dilemmas possibly has been solved through the disclosures to be found in the leading article of this issue by Drs. Lawrence and Blanchard whose investigations have been carried out at the University of Michigan's Institute of Industrial Health.

Many thousands of persons in and out of industry, without any advice from the medical profession, are well aware that they are much more disturbed than their fellows by many of the sounds about them. Some are distressed rather than pleased by much symphonic music. They are discomforted by noises in the factory or on the street or in the home that little disturb others about them. These persons are to be labeled as possessing "fragile ears"—readily damaged ears. As workers they are prone to develop real deafness as the result of work exposure at the very time the majority of their fellow workmen are little damaged by moderately excessive noise and may pass through an entire work lifetime without incurring noise damage. It does not follow that any type of ear may be so stable as to escape the ravages of starkly excessive noise. That is not the issue.

The investigations of Lawrence and Blanchard do not afford any method for the segregation of occupational deafness from ordinary deafness. That awaits further disclosures. The new test here described makes it possible on a practical basis for the industrial physician or the aurist on a work preplacement basis to keep out of noise areas any and all applicants with supersensitive ears who later on and perhaps only after years of exposure would make up the noise-deafened population.

## Scrabble

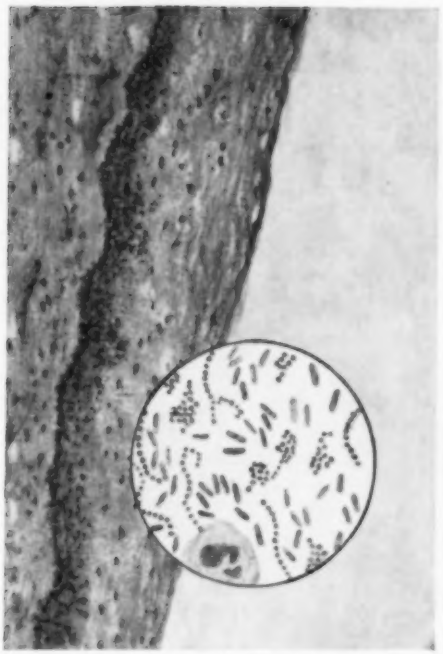
SCRABBLE is not just a game for whiling away the fatigued postprandial hours or for the amusement of guests evincing signs of boredom, always attended by the threat of marring the board by overturned concoctions of benedictine and brandy. Scrabble is the teacher of one of life's fundamentals. The agile brain teems with words —"hippopotamus," "hydrangea," "hydrocele," "hoecake." The opportunity is there, but not the tiles. You end up with "hip" and hopefully await the next round. You used what was at hand.

In all of life, all medical life, all industrial medical life, the proneness is to await the perfect surroundings—the complete laboratory with a mass spectrometer, the large staff of nurses, physicians, secretaries, and with a statistician and an industrial hygienist. Ramazzini had no laboratory or staff, just legs that carried him to work places, ears that listened and eyes that saw. Jenner in rescuing mankind from smallpox was equipped only with smallpox epidemics on the one hand and cowpox and imagination on the other. Scurvy, the occupational scourge of sailors, was solved long before its banishers might even have heard the terms "ascorbic acid" or "vitamin C." They used the tiles before them. They accepted "hip" as a completeness even though "hippopotamus" was the desideratum.

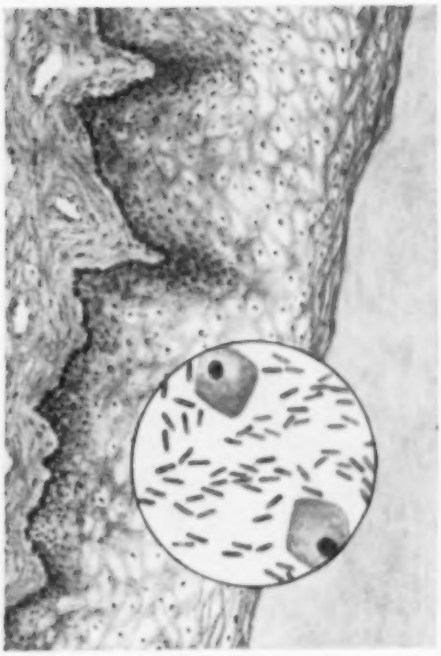
One learns to work with what he has; to achieve with the immediate; the while to strive for the ultimate betterment, even though today is the only day on the tile rack.

## Patron or Partner?

THE RELATION between medicine and management, as Dr. Page points out elsewhere in this issue, "is definite and firmly established." The great and growing list of Medical Departments which have received the IMA Certificate of Approval offers probation. In the teeming area of the country's foremost enterprises, medicine and management are partners, held together by the sturdy span of mutual cooperation, strong enough for the ultimate of live-load in people. However, by no means all of industry is within that area, and as to the large part that isn't, the pier on which the span is supposed to rest at the management end is still too often a weak and insufficient structure. "Some medical programs have been tucked away under safety, some under personnel, a few seem floating unattached, and too many others are treated by down-the-line supervisors as of minor importance to be merely tolerated, perhaps in response to union-labor demands." In situations such as these the management attitude may vary from reluctance and indifference to a compromise with expediency. But in the long run, this attitude may not be too important. From the medicine end, the relation with management is a cantilever, anchored in professional status, and reaching out toward any point of management acceptance. Regardless of the degree to which it is accepted, medicine in industry is still medicine; it can stand alone; it has more to give than to get; and management's vagaries of attitude concerning it are harmful only to management. Acceptance may be gradual, but it is inevitable. Meanwhile, medicine in industry has no need to feel honored or appear impressed when management attends its meetings or otherwise publicly acknowledges its existence. True, management pays the bills, but since medicine is giving more than value received, there is no dignity in accepting as the largesse of a patron what should be the due of a partner.



Senile vaginal epithelium is low in glycogen, low in acid and (inset) low in protective Döderlein bacilli, encouraging growth of pathogenic organisms.



Normal vaginal epithelium is high in glycogen, is definitely acid and (inset) contains adequate Döderlein bacilli to combat pathogenic organisms.

# Restoring the Normal Acid Barrier to Trichomonal Vaginal Infection

*To discourage multiplication of trichomonads and to encourage physiologic protective mechanisms, a comprehensive therapeutic regimen with Floraquin® is instituted.*

The normal vagina, by reason of its acid reaction, is provided with a natural barrier against pathogenic microorganisms which require an alkaline medium. When the "acid barrier" is removed, a hypo-acid state results and growth of the protective, physiologic and nonpathogenic Döderlein bacilli is inhibited—to be replaced by such pathogenic organisms as the trichomonad, streptococcus, staphylococcus, colon bacillus and Monilia candida.

As infection develops, the epithelial cell layers, which normally number between forty-five and fifty-five, may decrease to as few as fifteen to twelve layers or may disappear entirely. With this loss of glycogen-bearing cell layers, the available carbohydrate released by physiologic desquamation into the vaginal secretion and ultimately converted into lactic acid is proportionately decreased.

Floraquin not only provides an effective trichomonacide (*Diodoquin®*), destructive to pathogenic organisms, but furnishes sugar and boric acid for reestablishment of the normal vaginal acidity and regrowth of the normal protective flora. G. D. Searle & Co., Research in the Service of Medicine.

# Specially Packaged for Industrial Use

**ANACIN** . . . The Anacin Industrial Unit provides 250 cellophane envelopes, each envelope containing two Anacin tablets. This package offers the advantages of cleanliness and convenience for dispensing to individuals. It also assures the proper dosage in every case. Anacin is preferred in so many industrial dispensaries because Anacin gives fast, long-lasting relief from pains of headache, neuritis and neuralgia. When you order Anacin® tablets, order them in this special sanitary industrial unit, 250 envelopes, or 500 tablets, for $2.83.

**BiSoDol Powder** . . . Fast acting, antacid alkalizer . . . Packaged in a 16 oz. wide-mouthed bottle for easy, quick dispensing. BiSoDol® is exceedingly effective in relieving upset stomach, acid-indigestion, "gas," heartburn, sour stomach, fullness, nausea and other forms of distress when caused by excess stomach acidity. $2.00 each.

**BiSoDol Mints** . . . For greater convenience, BiSoDol is also packaged as mint tablets, 500 to the bottle. BiSoDol Mints are so palatable that they may be taken without water, if desired. $1.70 for 500 tablets.

**PETRO-SYLLIUM** . . . A mineral oil emulsion for the relief of constipation. Available either plain (blue label) or with phenolphthalein (red label). Petro-Syllium® is pleasant to take, gentle, thorough in effect. Packaged in 16 oz. bottles, $8.80 per dozen.

**NEW! SPERTI BIO-DYNE® OINTMENT** . . . For the treatment of burns, cuts, abrasions, contains biological substances obtained from yeast and fish liver cells which act in minute quantities directly on injured cells to stimulate their metabolism and proliferation. Minimizes scar formation—promotes rapid healing. Packaged in 15 oz. jars @ $48.00 per dozen. (Minimum shipment—3 jars.) Hospital size—5 lb. jar $15.50 per bottle.

REG. U.S. PAT. OFF.

**WHITEHALL PHARMACAL COMPANY • New York 16 • N. Y.**

# News, Comment, Opinion

MAYBE one reason, some scientists have said, why men get lung cancer oftener than women: they spend more time in dirty industrial areas.

—*Louisville Courier Journal*, February 24, 1954.

## Costly

THE STATE of Washington's Division of Safety recently compiled figures which indicate that occupational diseases there have been costly. Average cost per case is $385.00. Average days lost per case are 94.5.

—*Occupational Hazards*, March, 1954.

## Investment Per Job

THE capital investment per worker has steadily increased over the years, and today is very substantial. Studies by the National Industrial Conference Board show the following amounts of investment per worker in manufacturing enterprises: 1909—$2,800; 1919—$5,000; 1929—$6,900; 1939—$6,000; 1949—$9,400; and 1950—$10,000.

—Metropolitan Life Annual Report, 1953.

## Health Hint

SALARIED employees of Talon, Inc., Meadville, Pennsylvania have a real incentive to stay healthy. Any unused part of the annual fortnight's sick leave can be added to the following year's vacation. Reduced absenteeism doesn't save Talon any money, but does reduce the dislocations which result from sporadic absences.

—*Supervisor's News Service* (Bureau of Business Practice, New London, Connecticut), in *Management Review*, March, 1954.

## Quick Cure

ARE SOME of your employees puzzled and bothered by the cheating of others who spend sick-leave time hunting, fishing, and vacationing—no matter how much they're needed at work? Here's an idea that may prove useful in correcting the situation. The Norwest Plumbing & Heating Supply Company, Detroit, found that some employees would use up their whole 40 hours' sick leave early in the year, while the more loyal and conscientious ones would not take off unless they were actually sick. As a result, the employees who were on the job every day in effect got 40 hours' less pay than others less diligent. Accordingly, starting last year, the company advised all employees under union contract that they would be paid in cash, the week before Christmas, for any unused sick leave to their credit. This gimmick—which actually costs the company very little—has proved to be so successful in reducing unnecessary absence that this year it is being extended to office employees. "Some workers who formerly stayed home if they had the slightest headache now manage to make it to work every day of the year," says Kenneth Adams, company administrative director. "We feel that the extra expense has been more than compensated for by reducing unexpected absenteeism."

—*Personnel Administration Service* (Dartnell), in *Management Review*, April, 1954.

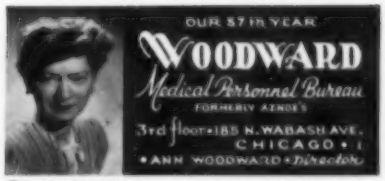
## Check Both Ends

PHYSICIANS and dentists sat together recently at a meeting, discussing problems common to both professions. One of the dentists passed a note to the chairman asking the question, "Why have so many patients who come to a dentist for a complete mouth examination seen five to seven M.D.'s before one finally suggests, 'Why don't you have your teeth checked?'" "That is," he said parenthetically, and not without malice toward some, "when a tonsillectomy or an hysterectomy won't help." The dentist had a point, and a good one. Enthusiasm for indiscriminate removal of tonsils and teeth has passed; most physicians recognize and respect the evil of pelvic operations supposed to relieve neuroses and psychosomatic troubles. But sometimes they simply forget that dental sepsis may be the source of many things from vertigo to carbuncles. Many months ago these columns decried physical examinations without examination of both ends of the alimentary canal with head mirror and gloved finger. While you're at it, how are the teeth?

—*Rocky Mountain Medical Journal*, March, 1954.

## On Alcoholism

AN INSTITUTE on Alcoholism for registered professional nurses will be held at Yale, July 29 through July 31, 1954. The sessions are planned to acquaint a


*Founders of the counseling service to the medical profession, serving medicine with distinction over half a century.*

**POSITIONS WANTED**

**Physician:** (228) 30; Class "A" graduate; one year, internship; one year, Fellowship, industrial medicine, important industrial medicine laboratory; one year, Director, Health and Safety Division, university and AEC program; interested industrial medicine as career, preferably with opportunity with isotopes, radiology or nuclear-energy as applied to medicine; excellent as assistant to Medical Director, this type program; Category IV.

**Medical Director:** (229) 36; M.D., Jefferson Medical College; qualified, industrial hygiene; diseases of the chest; residency in medicine and surgery; two years, private general practice; one year, medical examiner, important railroad; five years, industrial physician, heavy industry; Class IV; $10-$12,000.

**Industrial Hygienist:** (230) 30; M.D., C.M., Queen's University, Ontario; two years, internship; one year, surgical residency; three years, government medical officer, industrial division; prefers East or New England.

**Medical Director:** (231) 42; Class "A"; five years, Medical Director, important company; (14,000 employees); three years, Medical Director, major company with 16,000 employees; seeks challenging opportunity; outstanding record of achievement.

**Staff Physician:** (232) M.D. degree, Pittsburgh Medical; four years, mine physician; 12 years, very successful private general practice; seeks industrial position in West, preferably Wyoming or Montana with opportunity for private practice; late 30's.

**Staff Physician:** (233) Graduated, University Nebraska, Medical; following years rotating internship has had several years experience in own private general practice; prefers industrial salaried position; 34.

**Staff Physician:** (234) 41; M.D., Vermont Medical; rotating internship; five years, flight surgeon USAF; three years, fellowship, pathology; medical school; two years, assistant medical director, insurance company; finishing three year tour of military duty as Base Surgeon; well-qualified man as assistant to busy Medical Director, $9-10,000.

**Medical Director:** (235) M.D., University of Virginia; Diplomate, American Board of Internal Medicine; experience includes four years, Flight Surgeon, USAMC; years' private general practice; three years, Assistant Medical Director, Life Insurance company and two years, physician, major Eastern company, well-qualified to organize develop and supervise industrial health program. late 30's; excellent recommendations.

**POSITIONS OPEN**

**Medical Director:** (98) leading company; 25 plants; complete charge program, policies; career post; headquarters, large city; East.

**Medical Director:** (99) Important regional plant; major company; key post; pleasant living near important educational center; above-average advancement potential; California.

**Director, Industrial Hygiene:** (100) Requires Degree in chemistry and minimum, five years experience in the general field of industrial hygiene; major company; leader in its field; attractive town 60,000 near university medical center; substantial; Middlewest.

**Associate Medical Director:** (101) Replace present associate leaving after 15 years; outstanding industrial medical program; machine tool manufacturer; 7000 employees; $10-12,000; large city; university medical center; known to us and recommended.

**Please write for an Analysis Form so we may prepare an individual survey for you.**

**STRICTLY CONFIDENTIAL**

limited number of nurses with the nature and extent of alcoholism and with theories concerning the etiology of addiction. Attention will be directed toward the effectiveness of various treatment resources, and emphasis will be given the role of the nurse in interpreting to patients or their families the nature of alcoholism and the necessity of securing specialized assistance following hospital treatment for acute intoxication. The course will consist of lectures and discussion sessions, with a staff drawn from the faculties of Yale and other institutions. This Institute is sponsored by the Yale University School of Nursing, the Summer School of Alcohol Studies, and the Connecticut League for Nursing. Inquiries may be addressed to: Yale Center of Alcohol Studies, 52 Hillhouse Avenue, Yale Station, New Haven, Connecticut.

### Preventive Project

A GREATLY intensified interest in health and welfare plans of labor unions has sprung up within recent years. An excellent example of this is seen in a new survey published by the American Medical Association called "Union Health Centers." This survey traces the growth of present plans, and notes in the introduction that during and since World War II a much broader and deeper system of such plans has been growing. It is interesting that the pros and cons of such plans have also been presented recently by the *Wall Street Journal*. In a series of articles on the Teamsters Union, the *Journal* states: "A deep concern for 'health and welfare' has seized leaders of the Teamsters Union. In the brief period since World War II they've rushed to arrange a bewildering variety of insurance and direct medical service programs." The article goes on to relate that the interest does not confine itself to the unions themselves, but is manifested in local grand juries and by no less than three Congressional committees. Most of this interest is directed toward finding out about the disposition of certain union funds. One such investigation is being made into the Labor Health Institute in St. Louis, whose finances are being questioned. According to the *Journal*: "The Institute has its own elaborately equipped five-story clinical building where union members and their families can get their teeth fixed, have allergies treated, their throats sprayed, their bones x-rayed, and buy drugs. It finances service in hospitals, as well. Nearly a million dollars annually is paid in by 175 companies and employer groups whose contracts with the union provide that either 5% or 3½% of their gross payrolls shall go to L.H.I. The larger figure appears in contracts providing full coverage for the dependents of union members." While the *Journal* goes into detail about union leaders being jailed for failure to produce books on health plans, another similar plan, with infinitely different purposes and


ATTENTION MEDICAL DIRECTORS:

During the last national emergency DOMEBORO Solutions served in maintaining industrial health and in combatting loss of manpower due to absenteeism.

Once more we are ready, with DOMEBORO, plus another outstanding DOME specialty, to help you keep the country's industrial army fit and efficient.

DOME CHEMICALS, INC.
109 WEST 64 ST.
NEW YORK 23, N. Y.

Originators of Modernized Burow's Solution

MODERNIZED BUROW'S SOLUTION

DOMEBORO
Trademark

FOR INDUSTRIAL ACCIDENTS, CUTS, INFLAMMATION, SWELLINGS, BRUISES, ETC.

The safe aluminum acetate (pH 4.2) WET DRESSING for all skin inflammations . . . *regardless of cause!*

100% WHOLE, CRUDE COAL TAR OINTMENT

KOLPIX
Trademark

FOR INDUSTRIAL DERMATITIS

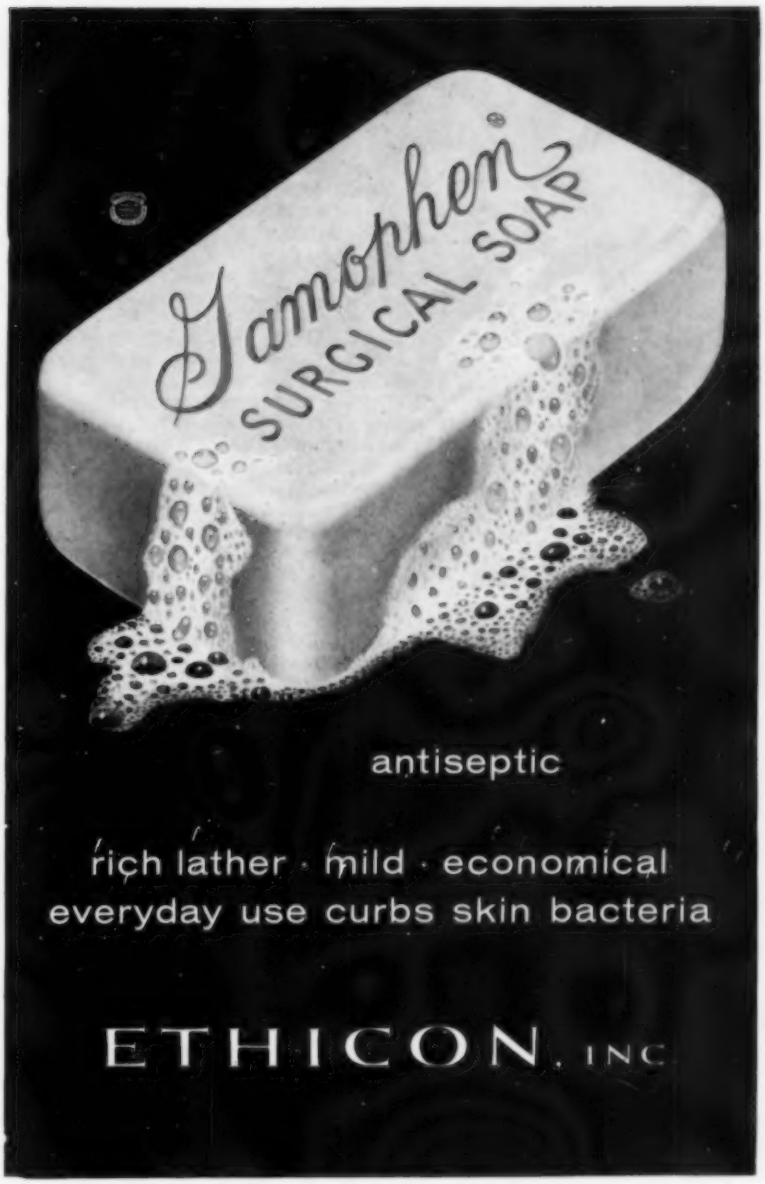
KOLPIX "A" — for weeping, vesicular skin eruptions, occupational dermatitis, dermatophytosis, and eczema.

KOLPIX "D" — for psoriatic, dry, squamous skin eruptions, pruritis ani and vulvae, varicose eczema and ulcers.

*Liberal samples to physicians on request*

consequences, has been reviewed. The *Wall Street Journal* itself has featured a story about a mass check-up which is praised by firms, unions and employees in Los Angeles. Called a project in preventive medicine, the plan consisted of 1000 workers at two manufacturing plants being given comprehensive, on-the-job physical checkups that didn't cost them anything. In the *Journal's* words: "Hoffman Radio Corporation's television division, with 500 employees, and its neighbor, Leach Relay Company, with an equal number of workers, offered the health survey as a means of ferreting out prevalent, but often unrecognized, ailments ranging from defective vision to heart trouble or lung cancer." The company's personnel manager praised the plan: "It's a benefit to the employees, and we believe in the long run it will also benefit the company in terms of better employee relations and reduction of lost time due to illness." The idea for the mass employee health screening came from the University of California at Los Angeles, which suggested it to union representatives. It was tried without fanfare and turned out to be successful enough to warrant a thorough test. The *Journal* reports: "An unusual demonstration of community teamwork by local health organizations kept the actual cash outlay for the survey to $500—or $100 apiece from each of the two companies and the three unions." Participating organizations and their contributions were: American Cancer Society (pamphlets, and review of some chest x-rays); California Department of Health (equipment for blood tests); Los Angeles City Health Department (equipment and medical advice); Los Angeles County Diabetes Association (equipment and blood sugar tests at minimum cost); Los Angeles County Heart Association (educational material, electrocardiograms); Los Angeles County Medical Association (coordination of projects); Los Angeles County Tuberculosis and Health Association (x-ray equipment, film, technician); University of Southern California Research Laboratory (coordination of diabetes tests); University of California at Los Angeles (its Institute of Industrial Relations acted as catalyst in getting companies, unions and other agencies together). The plan drew favorable comments from all those participating, union officials, company officials, agency officials and employees themselves. It was a sample of what can be done if all concerned work together to promote a worthy project for the good of all. Those who worked out the project feel that if used in other areas, care should be taken to see that all agencies are in on it and that all have a part in planning and operation.

—*Minnesota Medicine*, April, 1954.




1955 Industrial Health Conference
Buffalo, N.Y., April 23-29.

# Rugged

*. . . but his Hands need Protection*

STEPAN

# pH-6

*The lotion-like skin cleanser*

pH-6 is a specially formulated, sulfonated oil, bland skin cleanser . . . amazingly effective in removing oils, greases, and other industrial grime. Lotion-like effect actually protects the skin . . . leaving it clean, smooth, and supple.

## Neutra-Foam

New mild synthetic skin detergent with excellent foaming properties. Leaves no disagreeable soapy odor on the skin.

You'll find both pH-6 and Neutra-Foam are surprisingly economical. Send coupon for literature and samples.

## STEPAN CHEMICAL COMPANY

The Stepan Chemical Co. IM
20 N. Wacker Drive, Chicago 6, Illinois
Please send pH-6, Neutra-Foam literature and samples.
Name
Firm
Street Address
City and State


### Heartening

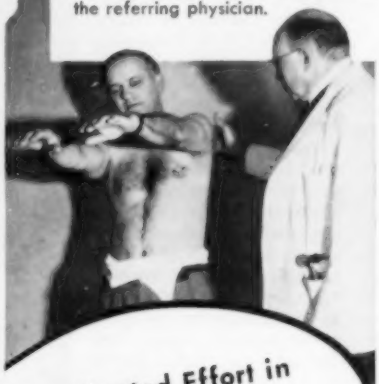
REVIEWING the history of 461 patients seen over a 10-year period (1932-41) at the Heart Station, Michael Reese Hospital, Drs. Louis N. Katz, David R. Cole and Evelyn B. Singian, of Chicago, found that fewer than one out of four (23%) died within two months of a first heart attack. A heart attack occurs when a coronary artery nourishing the heart is blocked by a clot, resulting in damage to a portion of the heart muscle. The average survival time of those who lived past the first two months was more than eight years. Sixty-six percent lived on more than five years; 43%, more than 10 years. Ten percent were still alive at the end of 15 years. These facts were gained through examination of the 10-year case records and a follow-up at the close of a second decade (January, 1952).

—American Heart Association Release.

### Epidemic

MEDICAL authorities are warning office managers to be on the lookout for signs of a strange malady which has begun to strike down office personnel and others. Although the ailment has not yet reached all sections of the land, it is reported to be spreading in some cities with the proportions of a major epidemic. Where it has developed, office productivity has dipped noticeably. This mysterious ailment first appeared recently in the southern states, but it is rapidly advancing northward. Tens of thousands already have been afflicted. No antidote has been discovered for fighting off its ravaging effects. Symptoms of the disorder are extremely diverse, according to a thorough analysis of medical reports. These symptoms, nonetheless, are relatively simple to identify. Office managers should watch for the slightest hint of eccentric or other unusual conduct among office personnel. More specifically, any of the following conditions may be taken as a clear-cut sign that the epidemic is about to strike—(1) If the staff in general seems to be dazed, and a bit glassy-eyed; (2) if a strange restlessness exists, especially among the youngest workers; (3) if the "old grouch," who has worked glumly at his desk for months without once cracking a smile, suddenly bounds into the office one morning


As soon as possible after arrival the patient is given the first of a series of complete physical examinations. The findings as well as subsequent laboratory studies are sent routinely to the referring physician.



## Coordinated Effort in TREATING the ALCOHOLIC PATIENT

The system of therapy at The Keeley Institute is aimed (1) at overcoming the *acute attack* of alcoholism; restoring the patient's well-being, and (2) through group and individual re-education attaining a condition of *permanent sobriety*.

At all times the regimen of treatment is well coordinated under the direction of a staff of experienced full-time physicians who are members of the American Medical Association.

When you refer a patient to The Keeley Institute, you know that he will be taken care of as your patient and you are continually informed of his progress.

*Member, American Hospital Association*
*Member, Illinois Hospital Association*
*The Keeley Institute is registered with the Council on Medical Education and Hospitals of the A.M.A.*

Complete information, including rates, will be furnished to physicians on request.

## THE KEELEY INSTITUTE
DWIGHT, ILLINOIS

**Prompt Relief from *PAIN***

*due to dysmenorrhea*

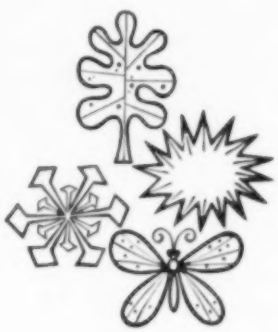
**HILLMAN'S "D" COMPOUND**

Immediate relief from painful symptoms is most satisfying to your patients and to you. Faster return to work increases production and reduces costly absenteeism.

*WRITE for descriptive booklet and FREE SAMPLES*

**HILLMAN PHARMACEUTICAL CO.**
**185 N. WABASH AVENUE • CHICAGO 1, ILLINOIS**

wearing his hat at a rakish angle and grinning like a fool idiot; (4) if your secretary presents you with a bouquet of daffodils and says you are a "nice boss." (An alternate of this symptom is to find the bouquet of daffodils on your secretary's desk, and discover that they were presented to her by the office boy.) Under extreme conditions, the daffodils will be red roses; in this event, prepare for possible explosive happenings to follow; (5) if, upon entering the president's office, you find him putting golf balls across his carpet; (6) if the supervisor of the typing pool, who has served the firm faithfully for 30 years, has changed her hair-do and carries about her a slight hint of the fragrance of violet cologne; (7) if you find yourself vacillating between limp drowsiness and strong compulsions to dash into the middle of the office and turn a cartwheel or dance a jig. These are the signs of the devastating disease commonly known among laymen as Spring Fever. Naturally, it is your job to prevent where you can its deteriorating influence on your or-

**always in season**

*Sprains and strains . . .*

*Soreness and stiffness of muscles . . .*

*Neuralgia, arthralgia and kindred rheumatic pains . . .*

*Irritations and eruptions of the skin . . .*

**IODEX** cum Methyl Salicylate

combines the stimulating and metabolic effects of iodine in Iodex and the analgesic action of methyl salicylate.

Absorption through the skin may be aided by massage, heat or iontophoresis.

Samples and literature cheerfully sent upon request.

MENLEY & JAMES, LTD., 70 WEST 40TH ST., N. Y. 18

*faster... deeper... relief for joint and muscle pain*

3 way ARTHRALGEN®

**Vasodilator • Analgesic • Rubefacient**
**dilates both arterioles and capillaries**

**Presenting the powerful vasodilator, methacholine chloride, Arthralgen dilates both the arterioles and capillaries producing a marked increase in blood supply in even the deeper regions. Combined with methyl salicylate to speedily deaden the sensation of pain for more prolonged periods and menthol and thymol to produce a powerful rubefacient and counterirritant effect.**

For: Strains, Sprains, Myalgia, Arthritic and Rheumatic Pain, Neuritis, Lumbago, etc.

AVAILABLE in 1 oz. tubes and 8 oz. jars

***FREE***
send for sample and literature

Whittier LABORATORIES 919 N. Michigan Ave., Chicago, Ill.


ganization. You will doubtless be held responsible for the actions of your staff—even when they are suffering the most tantalizing phases of the disease. What can you do about it? Actually there is little you can do. You might present a token battle, to prevent your office from getting completely off keel. Aside from that, you can only hope that the Spring Fever epidemic will not be of too long duration. Your best bet is to get into the spirit of the occasion. After all, it's Spring! Go ahead and dance your jig if you feel like it. It might do you good. Or prop your feet on your desk, sit back, relax, and gaze out the window. If the sun is shining, you might meditate upon the shape of a billowy cloud, or the grace of a gliding bird. And if it's raining . . . . well, just listen to the splendid sound the water makes as it patters on the window pane.

—Editorial, in *Office Executive*, April, 1954.

## The Passing Scene

THE PASSING scene of highway history is not a pleasant one. It is littered with the accumulated wreckage of 50 years of accidents. It is strewn with the bodies of more than a million killed. Among its population it numbers 40 to 45 million persons who have been injured. Its economic waste soars in the billions. And around the bend of the future, this scene is even more ghastly to contemplate. At the present rate, it should take only half the time to accomplish the same violence, destruction and carnage. Each year, we stand at a milestone of the passing scene and total up the grim score. We

In Peptic Ulcer management and in Hyperacidity, the *Non-constipating Antacid Adsorbant*

Gelusil®

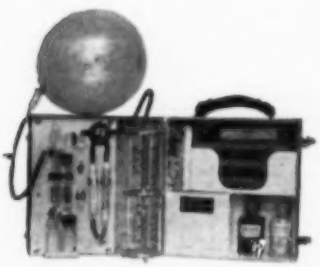
A pleasant tasting combination of especially prepared aluminum hydroxide gel and magnesium trisilicate

WARNER-CHILCOTT
*Laboratories* NEW YORK

# Hang Over and Sickness

**in workers are often confused.**

Both are hazards to production and efficiency in industry. By testing with the Harger Drunkometer drunkenness has been determined and lives have been saved when sickness is apparent.



The Harger Drunkometer, used nationally in industry and police departments, is the oldest and most widely used of the breath methods.

It convicts the guilty, protects the innocent and is now in use in hundreds of the largest industries.

*Write today for list of industries now successfully using the Harger Drunkometer.*

***Ask for folder M105***

STEPHENSON CORPORATION
RED BANK NEW JERSEY


have seen dirt roads become roaring super-highways. We have seen automobiles grow from one-lunged toys to giants of more than 200 horsepower. We have seen the safety crusade grow from a few slogans of admonition to a mighty outpouring of warning facts and figures, pictures and articles, slogans and speeches. But each year, we have seen the careless and the heedless rush by to destruction; the family outing turn into a mass tragedy; the speeding tourist taking a trip to nowhere; the party-goer dashing home to a life of pain. Out of the cold record of statistics we have tried each year to recreate the human beings whose last look at the passing scene was one of ultimate terror. The head-on collision, the curve missed, the blinding glare of undimmed headlights, the scream of brakes at an intersection, the helpless skid on wet pavement. Over the years, a thousand plans and panaceas have crossed our desks. Highway construction is the answer. Safety belts are the cure-all; padded instrument panels; speed governors; electronic policemen; higher licensing requirements. All these and many more are advanced as the one final answer to the problem of highway accidents. Putting all thousand into effect would undoubtedly help. But it is our conviction that neither science nor engineering, no matter how wisely or widely applied, can provide a permanent solution. This problem has its roots in the minds of men, and it is there we must look for the answer. Our annual studies of highway accidents have shown that more than 90% of the vehicles involved were in good condition; the highways were adequate if used at the speeds for which they were designed. We found the weather to be a negligible factor. We found that curved roads were no more hazardous than straight ones. Over the whole span of the passing scene, we have found that these were the variables in the equation of highway safety. The constant, unchanging factor was the man, woman, or child who sat behind the wheel of a car and transformed it from a useful servant to a projectile of destruction; or who, as a pedestrian walked carelessly into the path of danger. We are not psychologists. We cannot attempt to analyze the motives or impulses by which rational human beings become automotive


# Shay Medical Agency

PITTSFIELD BUILDING
55 E. WASHINGTON STREET
CHICAGO 2, ILLINOIS

BLANCHE L. SHAY, *Director*

*Service of Distinction since 1914*

**POSITIONS OPEN**

**Medical Director:** (D-1) East. Want a physician capable of setting up and directing an employee health program for a manufacturing company employing 2500 to 5500 people. The size of the company is small enough to permit attention to many details of an effective medical program yet large enough to offer a challenge. Good personnel practices and liberal employee benefits are in effect. $12,000 to $15,000.

**Assistant Medical Director:** (D-2) Central. Insurance. Excellent opportunity if you are interested in making a career in this field of medicine. Company's policy of promoting from within assures a good opportunity to advance to medical director. $10,000 to start.

**Medical Director:** (D-3) Large plant located in Midwestern city; 45 branch plants throughout United States. Five physicians on staff. Have good medical program, and all medical facilities are modern. Age 45-55. $10,000.

**Staff Physician:** (D-4) Young. Prefer physician interested in industrial medicine as career. Greater amount of work is administrative plus some clinical medicine. Real opportunity for a good future. 40-hour—five day week. To $10,000.

**Staff Physician:** (D-5) South. Large stable, progressive corporation wants a physician capable of assuming administrative duties in its extensive medical program; also some clinical medicine. Good opportunity to advance to medical director as this is a large corporation with many plants throughout the country. To $10,800.

**POSITIONS WANTED**

**Medical Director:** (S-1) 20 years experience. M.P.H. degree; including course in industrial hygiene. Eligible A.B. Preventive Medicine and Public Health. Age 54. Prefers east. Available now.

**Industrial Surgeon:** (S-2) Certified, 1954. D.N.B.M.E., Veteran; prefers association, research, teaching in town of over 50,000. Opportunity to travel desirable.

**Staff Physician:** (S-3) Has passed Part I of American Board of Physical Medicine and Rehabilitation; M.S. in Occupational Medicine. Veteran. Available now; will go anywhere.

**Medical Director:** (S-4) Surgeon. Age 48. Eight years intensive administrative experience in industry. Has set up and directed to successful consummation several medical programs for industrial companies and has had published articles in this field. Excellent medical background.

**Trade Association Field Secretary—Public Relations.** (S-5) Age 47. Master's Degree, Northwestern University. Last seven years as Public Relations and Field Secretary in medical field. Previous to that did Public Relations work in hospital field covering United States and Canada. Directed all public relations and organized business organization for large trade association made up of 28 smaller associations; this was on national scale. A real organizer with vast experience in the trade association field.

**Industrial Nurse:** (S-6) Age 40. Holds Public Health Certificate. Twelve years experience in industry; excellent references.

**Physical Therapist:** (S-7) Man. Age 24. Registered. Two years experience. Chicago area preferred.

**Industrial Hygiene Engineer:** (S-8) Age 37. Master's Degree. Excellent background in industry. Has set up and directed programs for several leading industrial companies. Will go anywhere; available now.

**WE ARE HOLDING A HANDY NOTE BOOK FOR CONVENTION MEMORANDA FOR YOU . . . STOP AT BOOTH 40 AND PICK IT UP.**

FOR PROMPT, CONTINUED RELIEF
OF PAIN...RAPID HEALING...USE

ANTISEPTIC • ANALGESIC

FOILLE®*

LIQUID OR OINTMENT

First in first aid *for treatment of burns • sunburns • cuts • abrasions • skin irritations • insect bites*

FOILLE Antiseptic-Analgesic is a dependable, convenient, surgical-type dressing which has won wide use and acceptance by Doctors, Hospitals and Industrial Plant Clinics over a period of twenty years.

*You're invited to request literature and samples*

**CARBISULPHOIL COMPANY — 2921 SWISS AVE. DALLAS, TEXAS**

killers. We know that some of these are too complex for the layman to understand. But some are so obvious that they sound a steady theme throughout our statistical surveys. Excessive speed is a killer; so is driving while intoxicated, weary or ill. Violation of the rules of the road is a prelude to disaster; so are gross carelessness and the willful abuse of highway etiquette. Although it is not our function to analyze or moralize more deeply, the conclusion is obvious. In most accidents, the guilty party is man and not machine, mind and not motor, reflex and not roadway. If the passing scene is to grow more peaceful and less deadly, the great change will have to come from the drivers and pedestrians who are now causing fatal accidents at the rate of more than 90 per day. Today, the automobile is a mixed blessing. Only by a personal commitment to care, caution, and control can we restore it to the role of useful servant and end the reign of terror on which we ourselves have started it.

—From "The Travelers 1954 Book of Street and Highway Accident Data." Travelers Insurance Company.

**RESULTS COUNT!...In Superficial Fungous Infections *especially* DERMATOMYCOSIS PEDIS**
(Athlete's Foot)

ANTI-MYCOTIC
ANTI-PRURITIC
ANTI-BACTERIAL

USE **Desenex®**

Ointment and powder of ZINCUNDECATE
Solution of UNDECYLENIC ACID

W&T *Pharmaceutical Division*
WALLACE & TIERNAN INCORPORATED, Belleville 9, N. J., U.S.A.

*Cures average case in one to three weeks*

PD-32

**PRESTON** A COMPLETE LINE FOR PHYSICAL MEDICINE AND **REHABILITATION**

*ALL your needs supplied by ONE reliable source*

**ALL TYPES OF THERAPEUTIC EXERCISE APPARATUS** including: **Bicycle Exercisers,** Hand Rehabilitation Devices, Ankle Exercisers, **Shoulder Wheels,** Quadriceps Boots, Dumbells, Walking Parallel Bars, Posture Mirrors, Stall Bars, **Chest Weights,** Gymnasium Mats.

**Whirlpools** of various designs, Diathermy, Galvanic Generators, **Paraffin Baths,** Hydrocollator, Heat Lamps and Bakers, **Hanovia Ultra-violet Lamps,** Treatment Tables, **Self-Help Devices,** Dynamometers, Goniometers.

We assist in the planning of new departments. Layouts and lists of equipment are prepared upon request and submitted free of charge. Inquiries invited.

*Write for your free copy of our illustrated Equipment Manual #1054.*

**J. A. PRESTON CORP.**
**175 FIFTH AVENUE, NEW YORK 10, N. Y.**

"... 140 million *working hours are lost annually as a result of dysmenorrhea ...*"

Haman, J.O.: Am. J. Obst. & Gynec. *49*:755 in M. Times *76*:416.

"... one third *of all young women in America are afflicted with it.*"

Torpin, R.; Woodbury, R.A., and Child, G.P.: Am. J. Obst. & Gynec. *54*:766 in M. Times *76*:416.

'Edrisal' is an ideal preparation for the woman who suffers from menstrual pain accompanied by such symptoms as headache, depression, irritability and lethargy.

Because it contains reliable analgesics, it gives relief from pain. And because it contains the antispasmodic-antidepressant Benzedrine* Sulfate, it not only overcomes the cramps of dysmenorrhea, but also increases the patient's sense of well-being.

# EDRISAL†

***to relieve pain and the depression that magnifies pain***

**Formula:** Each 'Edrisal' tablet contains: 'Benzedrine' Sulfate (racemic amphetamine sulfate, S.K.F.), 2.5 mg.; acetylsalicylic acid, 2½ gr. (0.16 Gm.); and phenacetin, 2½ gr. (0.16 Gm.).

**Recommended dose:** 2 tablets

**Also available, for intense pain:**
'Edrisal with Codeine ½ gr.' and
'Edrisal with Codeine ¼ gr.'

***Smith, Kline & French Laboratories, Philadelphia***

*T.M. Reg. U.S. Pat. Off. for racemic amphetamine sulfate, S.K.F.
†T.M. Reg. U.S. Pat. Off.

## TO PREVENT LOST TIME FROM SURFACE INFECTIONS

# Furacin® *a proven antibacterial*

brand of nitrofurazone, Eaton

Furacin—designed for external use only—produces truly outstanding results both in prophylaxis and therapy.

- wide range topical antibacterial therapy
- negligible toxicity for human tissues
- minimizes malodor of infected lesions
- effective in the presence of pus
- dissolves in exudates
- stable

**burns**
**wounds**
**ulcers**
**pyodermas**
**skin grafts**

**ALL THREE FORMS ARE CONVENIENT AND EASY TO USE**

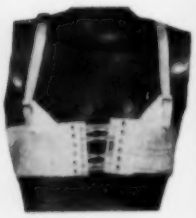
contain Furacin 0.2% in water-miscible vehicles

EATON LABORATORIES Inc
NORWICH, NEW YORK

THE NITROFURANS—A UNIQUE CLASS OF ANTIMICROBIALS ONLY PRODUCTS OF EATON RESEARCH

## LET STORM HELP YOU BEAT the INDUSTRIAL BACK PROBLEM

Model HS4
Double Purpose Belt



Same model used as rib-chest binder when reversed.

Immediate application of Storm Supports enables patients to return to work without bed rest in most cases.

•

Traction towards the spine limits overstretched muscles and ligaments to their normal range. Permits abdominal lumbar muscles full freedom of movement to 'milk out' effusion and hemorrhage.

**STOPS PAIN**

by relieving tension and muscle spasm. Patented Features • Exclusive Materials • Reasonably Priced. 4 sizes accommodate general run of patients.

•

*Industrial Clinics send for FREE SAMPLE. State size desired.*

**KATHERINE L. STORM SUPPORTS**
*Industrial Division*
1701 W. DIAMOND ST. PHILADELPHIA 21, PA.

TECKLAS are "on duty" in 48 STATES

## Teckla Krinkle Kimonas

**. . put your EMPLOYEE-PATIENTS at ease**

REQUIRE NO IRONING . . yet can "take" public laundering. 48" long; open full length. And you will find them O.K. for X-ray.

**6 for $14.50**
**12 for $27** **24 for $53**

**COUPON WILL SAVE YOUR TIME**

TECKLA GARMENT CO.
P. O. Box 863, Worcester 1, Mass.

Gentlemen: Please send the quantities of TECKLA KRINKLE KIMONAS indicated below. Send C.O.D.____ or Postpaid____

| SIZE | COLOR OF TIES | BUST MEASURE | QUANTITY WANTED |
|---|---|---|---|
| 1. SMALL | BLUE | 42" | |
| 2. MED. | WHITE | 52" | |
| 3. LARGE | PINK | 60" | |

FIRM _____
By: _____ (TITLE)
ADDRESS _____

Teckla pays postage on CASH orders

*the*

# *Plus*

*needed for complete anemia therapy*

# *Heptuna®*

# *Plus*

a vitamin-mineral formulation rich in iron, vitamin $B_{12}$ and folic acid

**each capsule of**

*Heptuna Plus*

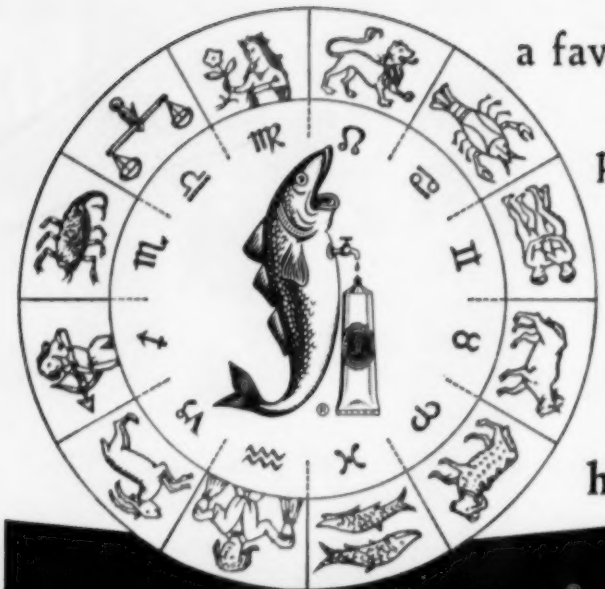
**contains:**

| | |
|---|---|
| Ferrous Sulfate U.S.P. | 4.5 gr. |
| Vitamin $B_{12}$ | 5 mcg. |
| Folic Acid | 0.33 mg. |
| Ascorbic Acid | 50 mg. |
| Vitamin A | 5,000 U.S.P. Units |
| Vitamin D | 500 U.S.P. Units |
| Thiamine Hydrochloride | 2 mg. |
| Riboflavin | 2 mg. |
| Pyridoxine Hydrochloride | 0.1 mg. |
| Niacinamide | 10 mg. |
| Calcium Pantothenate | 0.33 mg. |
| Cobalt | 0.1 mg. |
| Copper | 1 mg. |
| Molybdenum | 0.2 mg. |
| Calcium | 37.4 mg. |
| Iodine | 0.05 mg. |
| Manganese | 0.033 mg. |
| Magnesium | 2 mg. |
| Phosphorus | 29 mg. |
| Potassium | 1.7 mg. |
| Zinc | 0.4 mg. |

With other B-Complex Factors from Liver.

ROERIG

*536 Lake Shore Drive, Chicago 11, Illinois*



a favorite

prescription

the year 'round

to **accelerate**

**healing**

# DESITIN® ointment

the pioneer external **cod liver oil** therapy

New impressive studies[1] again confirm the clinical value[2-4] of Desitin Ointment to protect, soothe, facilitate healthy granulation, and speed healing even in stubborn skin conditions often resistant to other therapy.

*in* **wounds • burns • ulcers** (decubitus, varicose, diabetic)

**diaper rash • intertrigo**

**non-specific dermatoses • perianal dermatitis**

Protective, soothing, healing, Desitin Ointment is a non-irritating, non-sensitizing blend of high grade Norwegian cod liver oil (with its unsaturated fatty acids and high potency vitamins A and D in proper ratio for maximum efficacy), zinc oxide, talcum, petrolatum, and lanolin. Desitin Ointment does not liquefy at body temperature and is not decomposed or washed away by secretions, exudate, urine or excrements. Dressings easily applied and painlessly removed. Tubes of 1 oz., 2 oz., 4 oz., and 1 lb. jars.

**samples** and reprint[1] on request

**DESITIN CHEMICAL COMPANY**
70 Ship Street, Providence 2, R. I.

1. Grayzel, H. G., Heimer, C. B., and Grayzel, R. W.: New York St. J. M. 53:2233, 1953.
2. Heimer, C. B., Grayzel, H. G., and Kramer, B.: Archives of Pediatrics 68:382, 1951.
3. Behrman, H. T., Combes, F. C., Bobroff, A., and Leviticus, R.: Ind. Med. & Surgery 18:512, 1949.
4. Turell, R.: New York St. J. M. 50:2282, 1950.

# NEW HOPE in PSORIASIS

RIASOL has greatly improved the prognosis in psoriasis. The recovery rate has been increased from an average of 16½% with other methods of treatment as compared with 76% with RIASOL.

Our records show that the number of physicians who prescribe RIASOL for psoriasis is constantly increasing. The explanation is simple—one doctor tells another of his good results.

In a clinical test with RIASOL, most patients showed a turn for the better in a period of weeks. The red skin patches gradually faded and disappeared, and the scales were cleared in the majority of cases. There were no toxic effects and remissions were infrequent.

Once you have tried RIASOL, it will become your method of choice in the local treatment of psoriasis.

RIASOL contains 0.45% mercury chemically combined with soaps, 0.5% phenol and 0.75% cresol in a washable, non-staining, odorless vehicle.

Apply daily after a mild soap bath and thorough drying. A thin invisible, economical film suffices. No bandages required. After one week, adjust to patient's progress.

Ethically promoted RIASOL is supplied in 4 and 8 fld. oz. bottles at pharmacies or direct.

*Before Use of RIASOL Treatment*

*After Use of RIASOL Treatment*

MAIL COUPON TODAY—
TEST RIASOL YOURSELF

SHIELD LABORATORIES IM-5-54
12850 Mansfield Avenue, Detroit 27, Michigan

Please send me professional literature and generous clinical package of RIASOL.

M.D. _____ Street _____

City _____ Zone _____ State _____

Druggist _____ Address _____

**RIASOL for PSORIASIS**

**MOISTAIRE**

The Original Heat Therapy Unit

**UNEXCELLED**

for the delivery of moist heat at the exact prescribed temperature.

**COMFORT • SAFETY • DURABILITY**

**MOISTAIRE** accepted and approved since 1944 by the Council on Physical Medicine and Rehabilitation (AMA) and Underwriters' Laboratories.

*For illustrated information write, wire or call:*

*The* **RIES** *Corporation*

**515 SOUTH AIKEN AVE., PITTSBURGH 32, PA.**


# *Advertisers*


| | | | |
|---|---|---|---|
| Aeroplast Corp. | 27 | Ries Corporation | 46 |
| Arnar Stone Laboratories | 46 | Riker Laboratories | 16 |
| Ayerst, McKenna & Harrison | 2, 17 | Robins, A. H., Co. | 23 |
| Bauer & Black | 24 | Roerig, J. B., & Co. | 9, 25, 43 |
| Becton Dickinson & Co. | 19 | Schenley Laboratories | 28 |
| Bristol Myers Co. | 3rd cover | Schering Corp. | 5 |
| Burroughs Wellcome Co. | 22 | Searle, G. D., & Co. | 31 |
| Carbisulphoil Co. | 40 | Sharp & Dohme, Inc. | 11 |
| Ciba Pharmaceutical Co. | 4th cover | Shay Medical Agency | 39 |
| Desitin Chemical Co. | 44 | Shield Laboratories | 45 |
| Dome Chemicals, Inc. | 34 | Smith, Kline & French Laboratories | 41 |
| Eaton Laboratories, Inc. | 42 | Stepan Chemical Company | 36 |
| Ethicon Sutures, Inc. | 35 | Stephenson Corp. | 39 |
| Hillman Pharmaceuticals | 37 | Storm, Katherine L. | 42 |
| Johnson & Johnson | 7 | Teckla Garment Co. | 42 |
| Keeley Institute | 36 | Wallace & Tiernan Co. | 40 |
| Liebel Flarsheim Co. | 18 | Warner-Chilcott, Inc. | 38 |
| Lilly, Eli, & Co. | 30 | Westwood Pharmaceutical Co. | 2nd cover |
| Menley & James, Ltd. | 37 | Whitehall Pharmacal Co. | 32 |
| Packwood, G. H., Mfg. Co. | 20 | Whittier Laboratories | 38, 46 |
| Pfizer, Chas., & Co., Inc. | 1, 15, 21, 29 | Winthrop Stearns | 13 |
| Preston, J. A., Corp. | 40 | Wyeth, Inc. | 14, 26 |



A NEW *Quick* TOPICAL ANESTHETIC FOR OFFICE AND DISPENSARY

*Americaine* **AEROSOL**

AUTOMATIC SPRAY TOPICAL ANESTHETIC
CONTAINING 20% DISSOLVED BENZOCAINE

Just press the button and spray on this quick topical anesthetic. Clean, sanitary, painless to apply to traumatized areas. Prompt, sustained control of surface pain and itching. Bacteriostatic, helps prevent infections.

*For—*

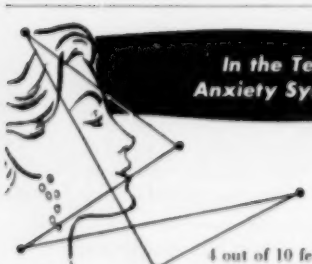
- BURNS
- ABRASIONS
- LACERATIONS
- ECZEMAS
- WOUND DEBRIDEMENT

***Also Available:***
**AMBRICAINE** Topical Anesthetic Ointment in ½ and 1 lb. jars.
**FREE**—*Send for Samples and Literature.*

In Canada: Brent Laboratories, Ltd., Toronto

**ARNAR-STONE LABORATORIES, INC.**

1316-B Sherman Ave., Evanston, Illinois



*In the Tension-Anxiety Syndrome* *Consider* **PREMENSTRUAL TENSION**

**M MINUS 5®**

*Preventive for*

**Premenstrual Tension and Dysmenorrhea**

Evidence shows that premenstrual tension results from excess fluid balance preceeding actual onset of menses. M-MINUS 5 prevents premenstrual tension symptoms by lowering excess fluid balance, reducing stimulus to uterine spasm, and providing effective analgesia. It does not interfere with the menstrual cycle, and is non-toxic in the prescribed dosages. Vainder showed 82% of cases of premenstrual tension and dysmenorrhea relieved with ***M-Minus 5***.(1)

(1) Vainder, Milton. Indus. Med. & Surg. 22:183 (Apr) 1953

Send for samples and literature

Each tablet contains:

| | |
|---|---|
| Pamabrom (2-amino-2-methyl-propanol-1-8-bromo-theophyllinate) | 50 mg. |
| Acetophenetidin | 100 mg. |

**DOSE:** One tablet 4 times a day, starting 5 days before expected onset of menses.

4 out of 10 female patients of childbearing age suffer symptoms

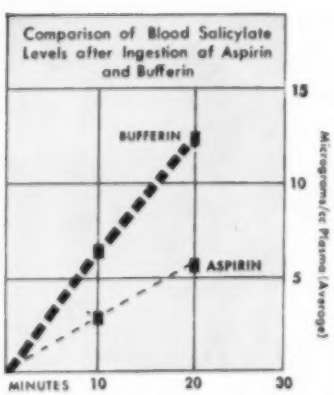
Symptoms are not relieved by usual sedatives, analgesics, or antispasmodics

*In bottles of 24 and 100*

**Whittier LABORATORIES**

919 N. Michigan Ave., Chicago, Ill.

# DON'T SEND HIM HOME—GIVE BUFFERIN®




**EACH BUFFERIN TABLET** contains 5 grains of acetylsalicylic acid, together with optimum amounts of the antacids aluminum glycinate and magnesium carbonate.

For minor aches and pain, BUFFERIN is the ideal analgesic for industrial use. It relieves pain promptly—*acts twice as fast as aspirin.*[1] Instead of going home the worker can go back to his job.

BUFFERIN is antacid. It is tolerated four to five times better than aspirin, as studies in a large industrial organization have demonstrated.[2] This is important, for there is little use in giving a worker an analgesic "that leaves him with nausea which also incapacitates him."[2]

**REFERENCES:** 1. Effect of Buffering Agents on Absorption of Acetylsalicylic Acid. J. Am. Pharm. Assoc., Sc. Ed. 39:21, Jan. 1950. 2. Gastric Tolerance for Aspirin and Buffered Aspirin. Ind. Med. 20:480, Oct. 1951.

**THE SPECIAL INDUSTRIAL PACKAGE MAKES DISPENSING EASY**

A box of 250 individual packets, each containing two BUFFERIN tablets, hermetically sealed in aluminum foil lined with protective cellulose acetate. The special low cost is $3.25. Order your package today.

Accepted Council on Dental Therapeutics American Dental Association

**BUFFERIN®** ACTS TWICE AS FAST AS ASPIRIN DOES NOT UPSET THE STOMACH

BRISTOL-MYERS COMPANY, 19 WEST 50 STREET, NEW YORK 20, N. Y.

**A similar package available from Bristol-Myers Co. of Canada, Ltd., 3035 St. Antoine St., Montreal 30, Canada**

BEFORE TREATMENT

ECZEMATOID DERMATITIS

AFTER 10 DAYS' TREATMENT WITH VIOFORM

# Vioform® CREAM

(IODOCHLORHYDROXYQUIN CIBA)

## FOR eczema

Despite the diagnostic complexities of the many forms of eczema—acute, subacute, chronic, infectious, etc., treatment with Vioform Cream or Vioform Ointment is uniformly simple, convenient, and, above all, consistently effective. Vioform has been termed "one of the best antieczematous, mildly soothing . . . remedies."*

*Issued:* Vioform Cream 3% and Vioform Ointment 3%, 50-Gm. tubes, 1-lb. jars.
Ciba Pharmaceutical Products, Inc.
Summit, N. J.

*Sulzberger, Marion B., and Wolf, J.: Dermatologic Therapy in General Practice, ed. 3, Chicago, Year Book Publishers, Inc., 1948, p. 107.

2/1736M

CIBA